



SERVICE MANUAL

(DC Inverter Free Match R410a)

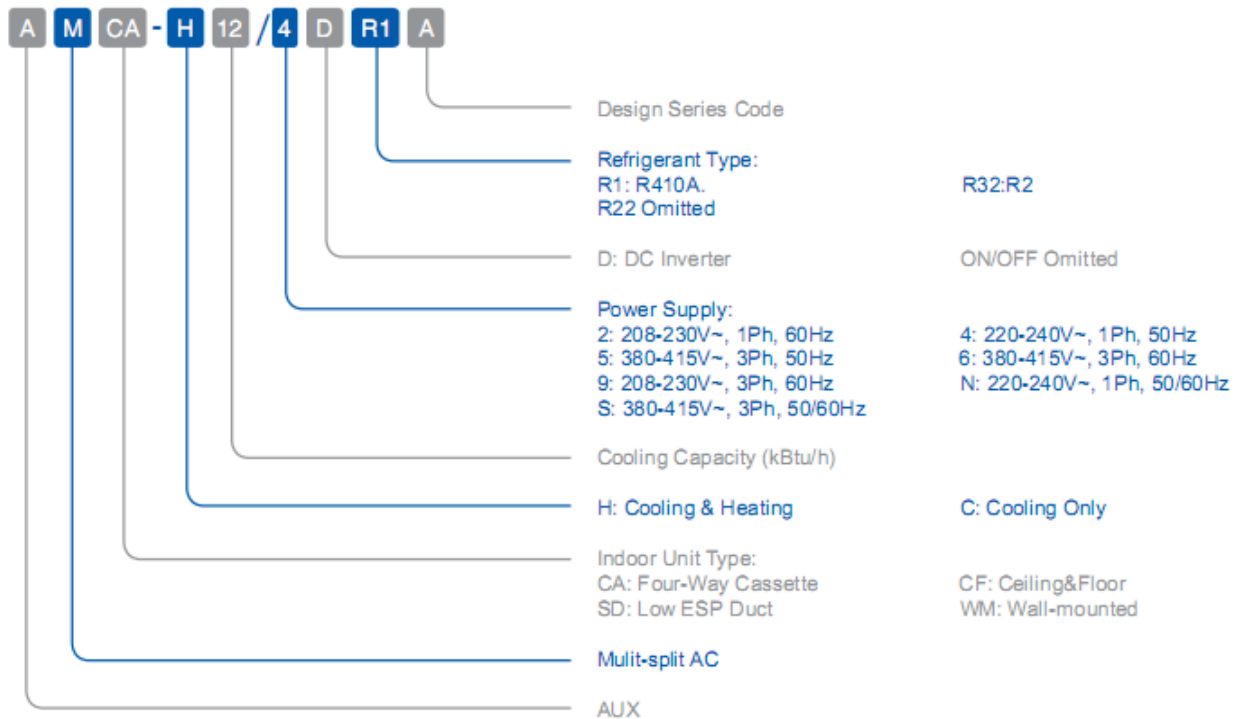
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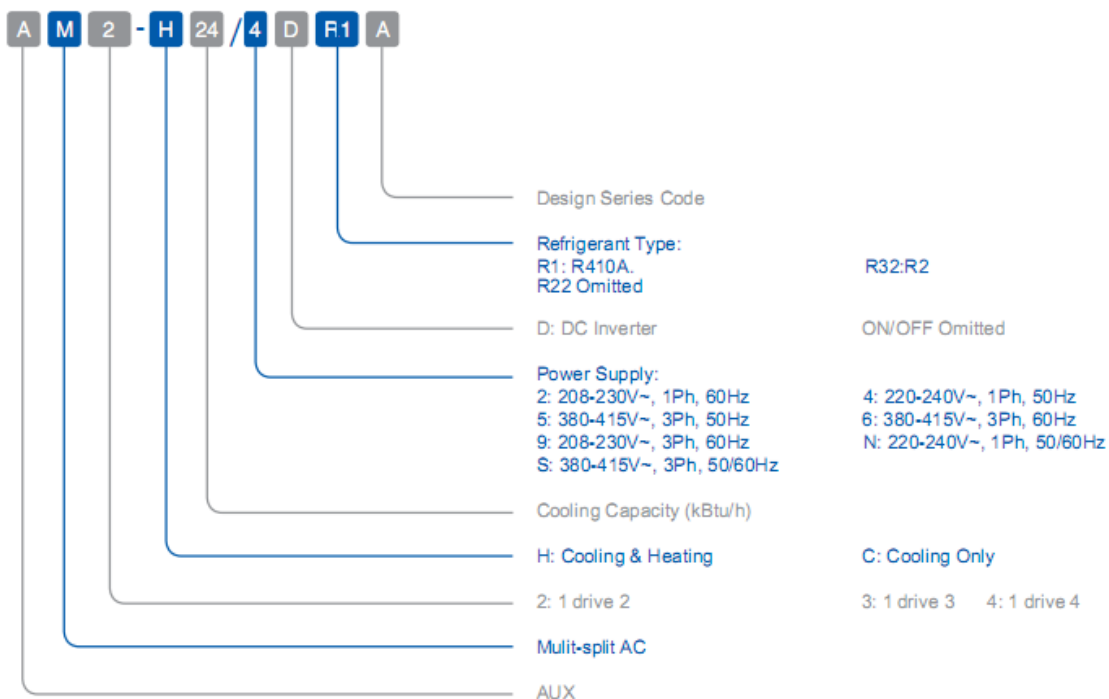
Part 1 General information

1. Nomenclature






Indoor Unit






Outdoor Unit



Unit Appearance

Series	Picture of the indoor unit
Four-way Cassette (New)	
	9K~18K Btu/h
Ceiling &Floor	
	9K~18K Btu/h
Low ESP Duct	
	7K~18K Btu/h
Wall-mounted (L Series)	
	7K~18K Btu/h
Wall-mounted (F Series)	
	7K~18K Btu/h

Series	Picture of the outdoor unit
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Capacity(Btu)	14000	18000	21000	27000	36000	42000
Outdoor Unit (New)						
	1 drive 2		1 drive 3		1 drive 4	1 drive 5

*Note :

① All of the above indoor unit can be freely matched and combined, but must be installed strictly according to the above table. Or the cooling capacity and stability would be decreased.

AM2-H18/4DR3	Suggested Combination										
	One Unit	Two Units									
	7	7+7	9+9								
	9	7+9	9+12								
AM3-H21/4DR3	Suggested Combination										
	One Unit	Two Units			Three Units						
	7	7+7	9+12	7+7+7	9+9+9						
	9	7+9	9+18	7+7+9							
AM3-H27/4DR3	Suggested Combination										
	One Unit	Two Units			Three Units						
	7	7+7	9+12	7+7+7	7+9+18						
	9	7+9	9+18	7+7+9	7+12+12						
AM4-H36/4DR3	Suggested Combination										
	One Unit	Two Units		Three Units			Four Units				
	7	7+7	9+18	7+7+7	7+9+18	9+12+18	7+7+7+7	7+7+12+12	9+9+9+9		
	9	7+9	9+24	7+7+9	7+9+24	9+12+24	7+7+7+9	7+7+12+18	9+9+9+9	7+7+7+7+9	
AM5-H42/4DR3	Suggested Combination										
	One Unit	Two Units		Three Units			Four Units			Five Units	
	7	7+7	9+24	7+7+7	7+9+24	9+9+18	12+12+24	7+7+7+7	7+7+12+12	7+12+12+12	7+7+7+7+7
	9	7+9	12+12	7+7+9	7+12+12	9+12+12	12+18+18	7+7+7+9	7+7+12+18	9+9+9+9	7+7+7+7+9

Part 2 Indoor unit

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Four-way cassett

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1. Function Introduction

Function	Name	AMCA-H*/4R1A		
		09	12	18
Protection Function	Anti-freeze protection	○	○	○
	Sensor failure alarm	○	○	○
	Error code display function	○	○	○
Comfortable Function	Cooling	○	○	○
	Heating	○	○	○
	3 fan speed	○	○	○
	Auto-restart (optional)	○	○	○
	Anti-cold wind	○	○	○
	Blow exhaust heat	○	○	○
	Timer	○	○	○
Opretating display	Clock display	○	○	○
	Operating mode display	○	○	○
	Fan speed display	○	○	○
	Defrosting display	○	○	○
	Timing on/off display	○	○	○
	Sleeping display	○	○	○
Operation mode	Auto/Cool/Dry/Heat	○	○	○
	Dehumidify operation	○	○	○
	Auto defrosting	○	○	○
	Ventilation function	○	○	○
Health function	Removable air filter	○	○	○
	Fresh air function preserved	○	○	○
	Installation instruction plate is available	○	○	○

2. Specification

Model	Indoor	Unit	AMCA-H09/4R1A	AMCA-H12/4R1A	AMCA-H18/4R1A
Capacity	Cooling	Btu/h	9560(5120-12115)	12285(5800-12625)	17060(8530-19107)
		kW	2.80(1.50-3.55)	3.60(1.70-3.70)	5.0(2.50-5.6)
	Heating	Btu/h	10240(5460-13000)	13306(6930-15080)	19107(10340-24000)
		kW	3.00(1.60-3.81)	3.9(2.03-4.42)	5.6(3.03-7.03)
Electric Data	Power Supply	V~,Hz,Ph	220~240,50,1	220~240,50,1	220~240,50,1
	Cooling Power Input	W	70(17.5-109)	70(17.5-109)	70(17.5-109)
	Heating Power Input	W	70(17.5-109)	70(17.5-109)	70(17.5-109)
Fan Motor	Model	/	XD30B	XD30B	XD30B
	Output Power	W	30	30	30
	Capacitor	uF	2.0	2.0	2.0
	Speed (Hi/Mi/Lo)	r/min	839/757/688	839/757/688	839/757/688
Indoor Coil	Number Of Row	/	2	2	2
	Tube Pitchx Row Pitch	mm	20.5x 12.7	20.5x 12.7	20.5x 12.7
	Fin Pitch	mm	1.5	1.5	1.5
	Fin Material	/	Hydrophilic aluminum fin	Hydrophilic aluminum fin	Hydrophilic aluminum fin
	Tube Outside Dia.&Material	mm	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved
	Coil Length x Height x Width	mm	1352x205x 25.4	1352x205x 25.4	1352x205x 25.4
	Heat Exchanging Area	m ²	5.76	5.76	5.76
Performance	Air Flow Volume	m ³ /h	700/600/530	700/600/530	700/600/530
	Sound Pressure Level	dB(A)	45/41/35	45/41/35	45/41/35
	Net Dim (W*D*H)	mm	570×570×260	570×570×260	570×570×260
Dimension	Packing Dim (W*D*H)	mm	650x650x290	650x650x290	650x650x290
	Net(Panel)	mm	650x650x55	650x650x55	650x650x55
	Packing(Panel)	mm	710x710x80	710x710x80	710x710x80
Weight	Net(Body)	kg	18	18	18
	Gross(Body)	kg	21	21	21
	Net(Panel)	kg	3	3	3
	Gross(Panel)	kg	5	5	5
Refrigerant Type		/	R410a	R410a	R410a
Pipe Dia	Liquid Side	mm(inch)	6.35(1/4)	6.35(1/4)	6.35(1/4)
	Gas Side	mm(inch)	12.7(1/2)	12.7(1/2)	12.7(1/2)
	Drainage	mm	20	20	20
Loading Qty	20/40/40H	unit	150/315/354	150/315/354	150/315/354

Note:

- Cooling capacity test Condition:(27°CDB,19°CWB Indoor/35°CDB,24°CWB Outdoor);
Heating capacity test Condition:(20°CDB Indoor/7°CDB,6°CWB Outdoor);
connecting pipe length: 7.5M.

2. Data may be changed with unit improvement. We keep the right to change the data or specifications without prior notice, please follow the data listed on the nameplate.

3. Capacity Amendment

3.1 Running range

Cooling capacity (Btu/h)		9000	12000	18000
Power supply		220-240V~/50Hz		
Voltage		187~253V		
Ambient temperature	Cooling	-10~52°C		
	Heating	-15~24°C		

3.2 Amendment coefficient of cooling capacity under different indoor/outdoor temperature(K1)

Indoor temperature(°C)		Outdoor temperature(DB)					
DB	WB	25	30	35	40	45	50
22	15	0.97	0.92	0.87	0.96	0.77	0.75
24	17	1.03	0.98	0.94	0.89	0.84	0.80
27	19	1.10	1.05	1	0.95	0.90	0.86
29	21	1.16	1.11	1.06	1.02	0.96	0.91
32	23	1.22	1.17	1.13	1.08	1.02	0.98

Actual cooling capacity calculation:

Actual cooling capacity=amendment coefficient of cooling capacity × nominal cooling capacity

——nominal cooling capacity could be found from the performance parameters list

——amendment coefficient of cooling capacity could be found from table above.

3.3 Amendment coefficient of heating capacity under different indoor/outdoor DB/WB temperature K2

Outdoor temperature(°C)		Indoor temperature(DB)		
DB	WB	15	20	25
-15	-16	0.64	0.59	0.55
-10	-12	0.71	0.66	0.62
-7	-8	0.76	0.72	0.67
-1	-2	0.79	0.74	0.70
2	1	0.81	0.76	0.72
7	6	1.04	1	0.96
10	9	1.10	1.06	1.01
15	12	1.16	1.12	1.07

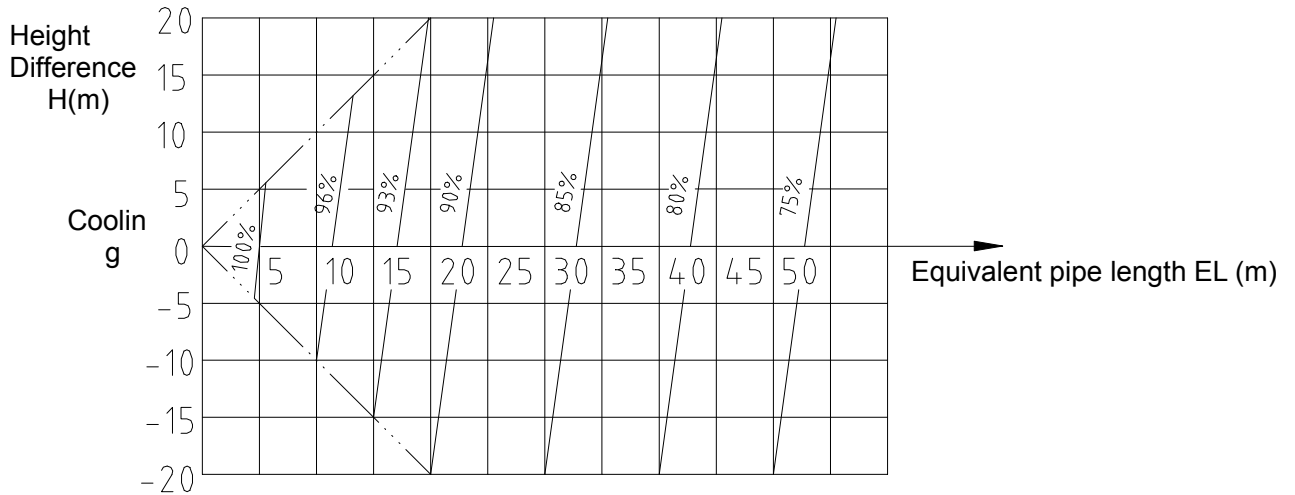
Actual heating capacity calculation:

Actual heating capacity=amendment coefficient of heating capacity × nominal heating capacity

- nominal heating capacity could be found from the performance parameters list
- amendment coefficient of heating capacity could be found from table above.

3.4 Amendment coefficients of heating and cooling capacity under different height drop K3

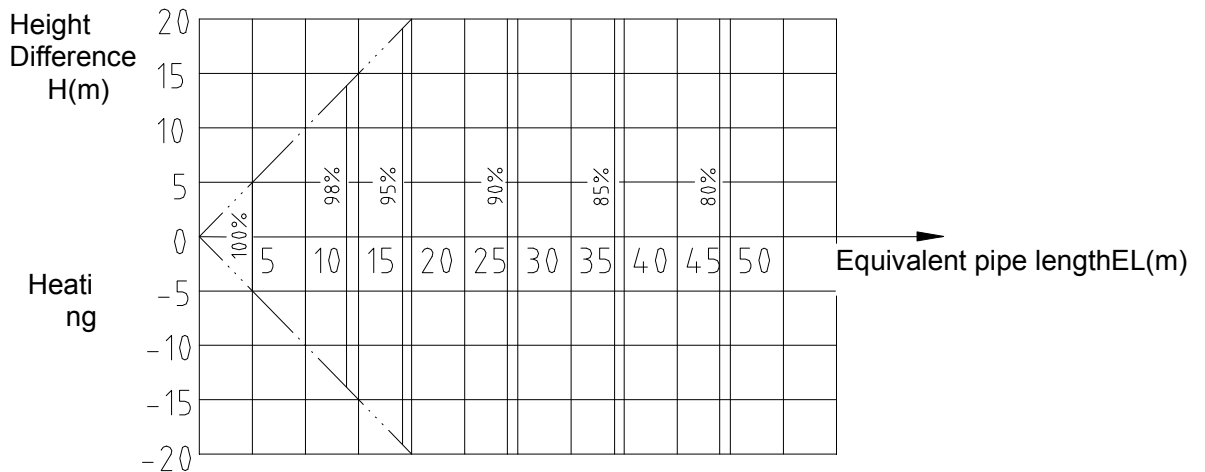
Different Cooling Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

Different Heating Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

3.5 Correction capability

Cooling capacity = nominal cooling capacity xK1xK3

Heating capacity = nominal heating capacity xK2xK3

3.6 Equivalent Pipe length conversion

Equivalent pipe length means converting pipe elbow to straight pipe length after considerate the pressure loss.

Bend and Oil Loop Conversion tablet

Type Pipe Dia.(mm)	Bend	Oil Loop
6.35	0.10	0.7
9.52	0.18	1.3
12.70	0.20	1.5
15.88	0.25	2.0
19.05	0.35	2.4
22.02	0.40	3.0

Equivalent Pipe length L = Actual Pipe length L+ Bend Qty× Equivalent pipe bend length+ Oil Loop Qty × Equivalent Oil Loop length

Sample:

AMCA-H09/4R1A Actual Pipe length is 25 meters, Gas pipe diameter is 9.52mm. If there's 5 bends and 2 oil loops during the installation, then the equivalent pipe length should be:

$$L=25+0.18\times 5+1.3\times 2=28.5(\text{m})$$

◇Specification of Connection Pipe for Indoor Unit and Outdoor Unit

Cooling Capacity(Btu/h)		9000	12000	18000
Connection Pipe (mm)	Liquid Pipe	Φ6.35		
	Gas Pipe	Φ12.7		
oil loops Qty		2		
Max. Bend Qty		5		
Extra R410a per meter when the pipe length is more than 7.5 meter (kg)		0.022		

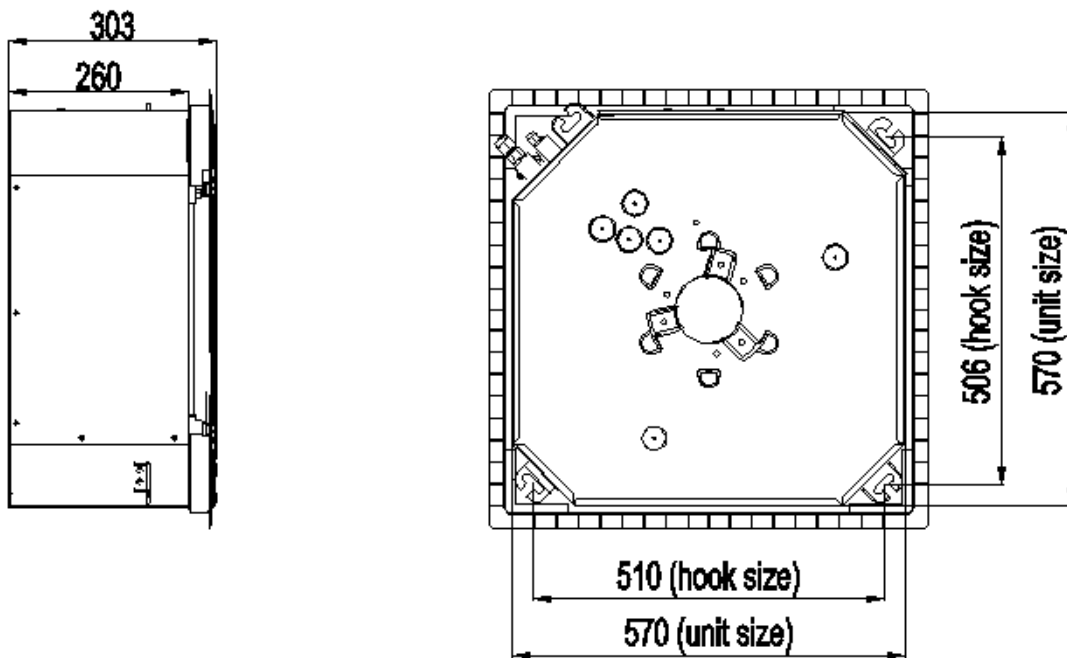
Caution:

1. The standard Pipe length is 7.5m, if the pipe length is less than this then no additional charging is necessary. If the pipe length is more than this then you should charge more refrigerant into the system according to the above Charging Data
2. The thickness of the pipe is 0.6-1.0, bearing pressure is 4.2MPa;
3. If the connection pipe is too long, the cooling capacity and stability would be decreased. And the more bend quantity, the resistance in the piping system would be bigger, then the cooling and heating capacity would be decreased even lead to compressor broken. We suggest you to use the shortest connection pipe according to the pipe length parameter in this manual.If the height difference between

outdoor and indoor unit is more than 5m, an oil trap should be installed in the gas pipe for every 10 meters.

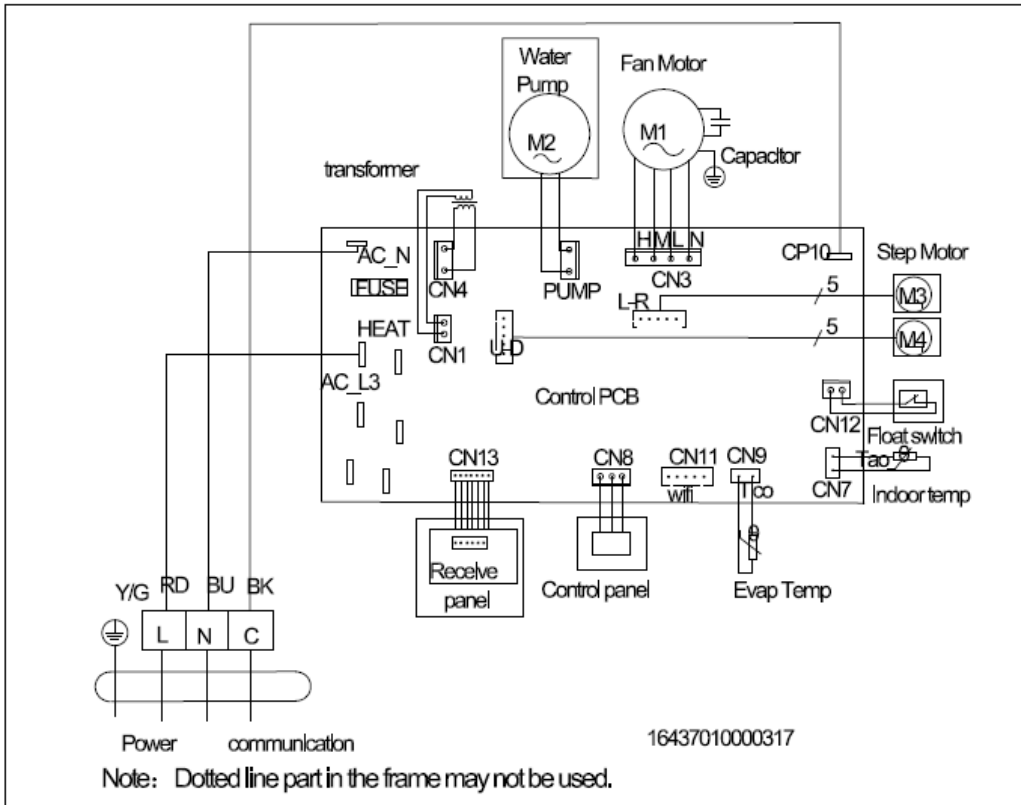
4. Dimension

AMCA-H09/4R1A, AMCA-H12/4R1A, AMCA-H18/4R1A



5. Electrical Diagram

AMCA-H09/4R1A, AMCA-H12/4R1A, AMCA-H18/4R1A



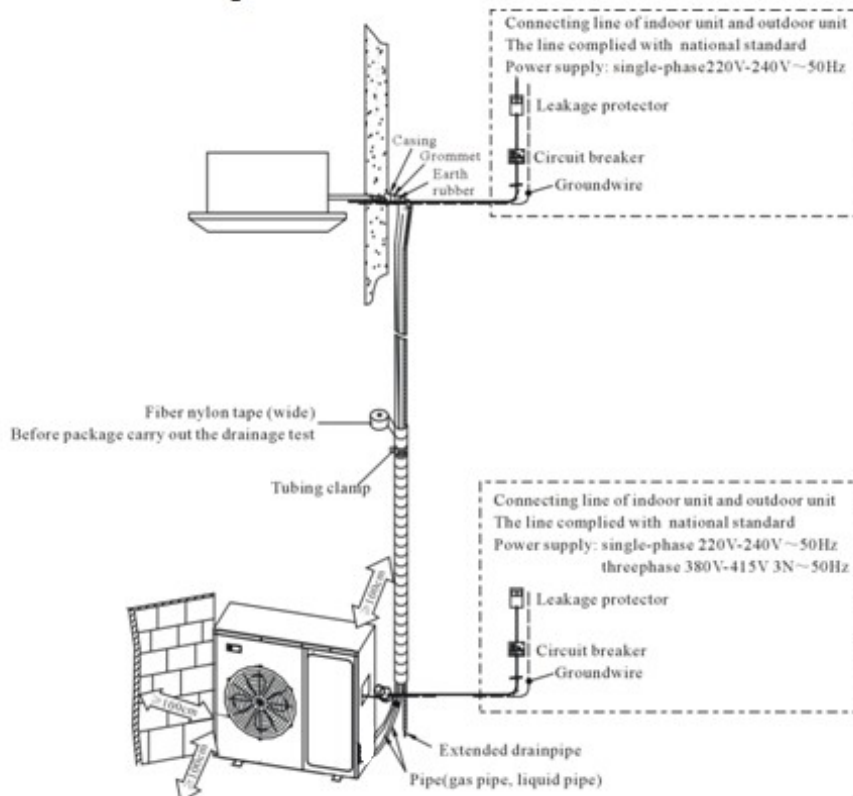
6. Installation

6.1 Preparation before installation

6.1.1 Please buy following spare parts from your local market before installation

1	Hung bolts M12, 4 pcs
2	Drainage pipe PVC
3	Copper pipe
4	Adhesive belt (big size) 5 pcs, (small size) 5 pcs
5	Heat insulation material used to connect copper pipe (PE foam material, its thickness is more than 8mm)
6	Power cable, electrical wire between indoor and outdoor unit(Must be in accordance with the wire diameter in the wiring diagram)
7	Acetylene cylinders, oxygen cylinders (when longer pipe used it should be welded)
8	One set pipe cut machine. (cut copper pipe)
9	Refrigerant cans, electronic balance (when longer pipe used additional gas should be charged)
10	Pressure gauges, pipe clamp, welding torch, 2B silver electrode
11	Wrench 2 pcs, one of them is with adjustable torque wrench(42N.m,65N.m,100N.mm)
12	Nitrogen cylinder (in order to prevent oxidation when welding, using Nitrogen to replace the air)

6.2 Installation drawing

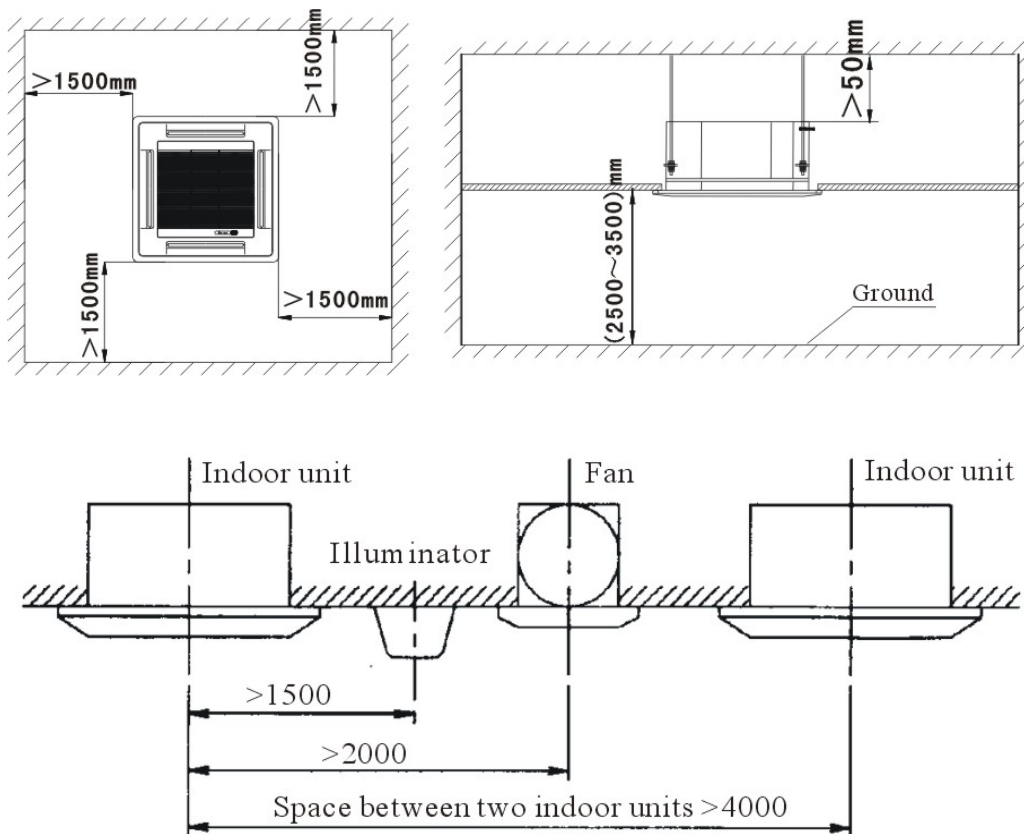


6.3 Installation precaution

- ◇ Hanging location should be able to support the unit's weight, there should be no increase in noise and vibration. If the hanging location needs reinforcement, it should be reinforced before installation;

- ◇ Choose the space above the ceiling that can put the indoor unit inside;
- ◇ The location should be easy for drainage;
- ◇ The unit should not be installed in the heat source, steam or oil mist source (such as machine room, kitchen, laundry room, mechanical workshop, etc.)
- ◇ Choose the location at least 1 meter away from TV and radio, in order to avoid interference to them
- ◇ There should be certain distance between indoor unit and obstacles for maintenance;
- ◇ In case of leakage of refrigerant, units should immediately stop running, and contact with maintenance personnel in time. There must be no fire at the site, because the refrigerant will turn to harmful gas when get to the fire.

6.4 The distance between indoor unit and obstacle

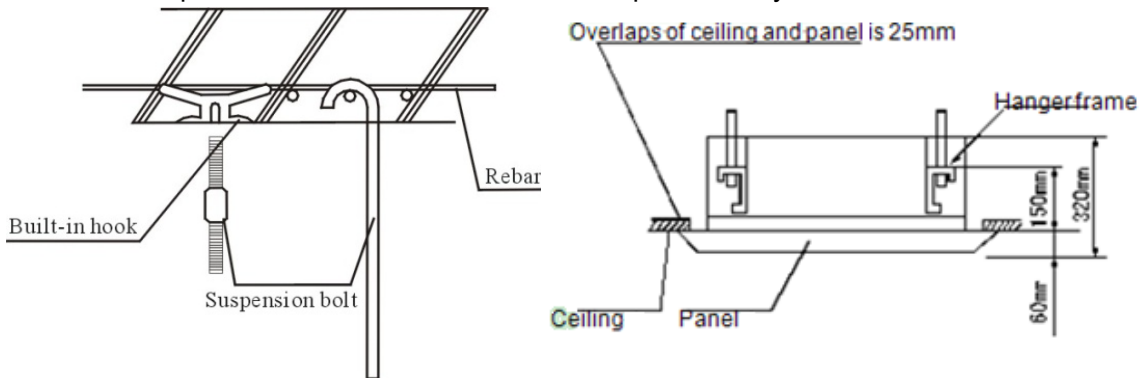


6.5 Indoor unit suspension

- ◇ Select the suspension foundation:
The suspension foundation is a structure of either wooden frame or reinforced concrete. It must be

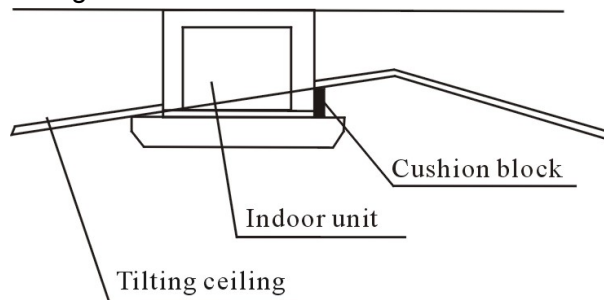
firm and reliable to bear at least 4 times weight of itself and capable of bearing vibration for long periods.

- ◇ Fixing of suspension foundation:
- ◇ Fix the suspension bolts either as shown in the picture or by a steel or wooden bracket.

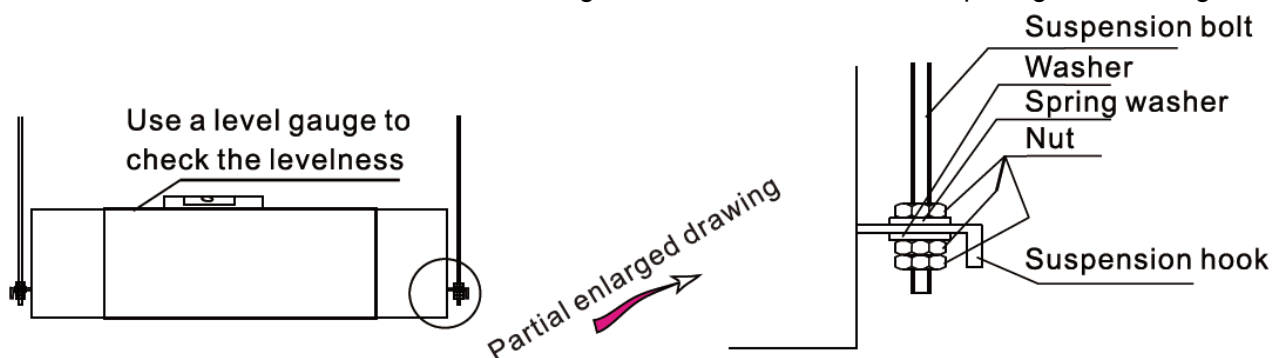


- ◇ If this unit is installed on a sloping ceiling, a cushion block should be installed between the ceiling and the air outlet panel, in order to ensure that the unit is installed on a level surface.

This is as shown in the drawing as follows:

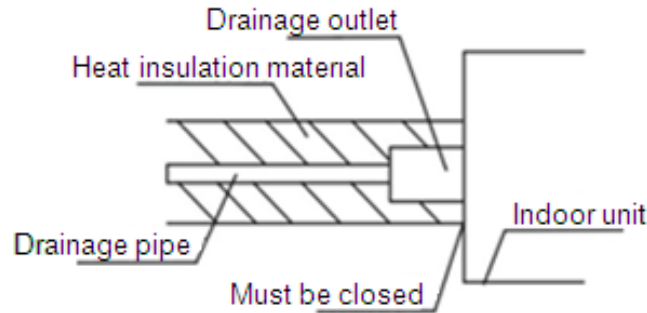


- ◇ Adjust the relative position of the suspension hook on the suspension bolt so that the unit can be in level position in all directions. Check with a level gauge after installation to ensure that the indoor unit is horizontal, otherwise it will cause water leakage, air leakage etc.
- ◇ Tighten the bolt and ensure that four hooks are in close contact with the nuts and washers, to fix the indoor unit under the ceiling.
- ◇ After the unit is installed ensure it is secure and does not shake or sway.
- ◇ Ensure that the centre of the indoor unit is in alignment with the centre of the opening in the ceiling.

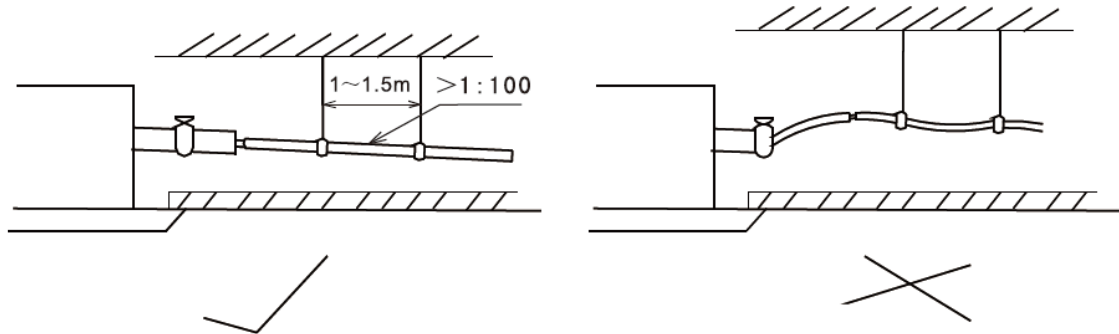


6.6 Drainage pipe installation

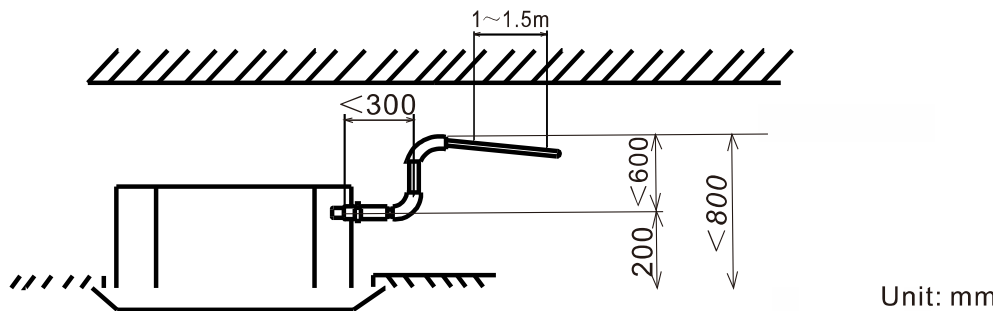
The drainage pipe should be properly insulated to prevent the generation of condensation. Heat insulation material: the thickness of rubber insulation pipe should be more than 8mm



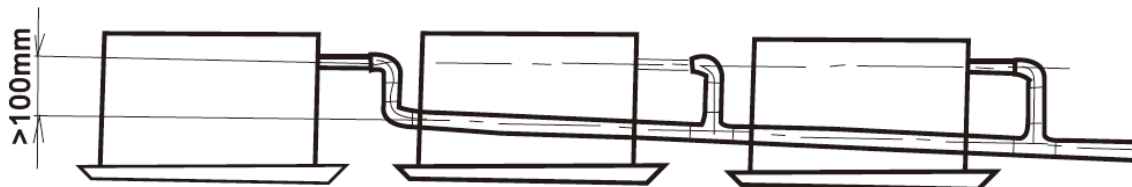
- ◇ Drainage pipe must have a downward gradient (1 / 50 1 / 100) to avoid water backflow or leakage etc.



- ◇ The unit has a drain pump which will lift up to 700 mm. However after the pump stops the water left in the pipe will drain back and may overflow the drain tray causing water leakage. For this reason please install the drain pipe as shown



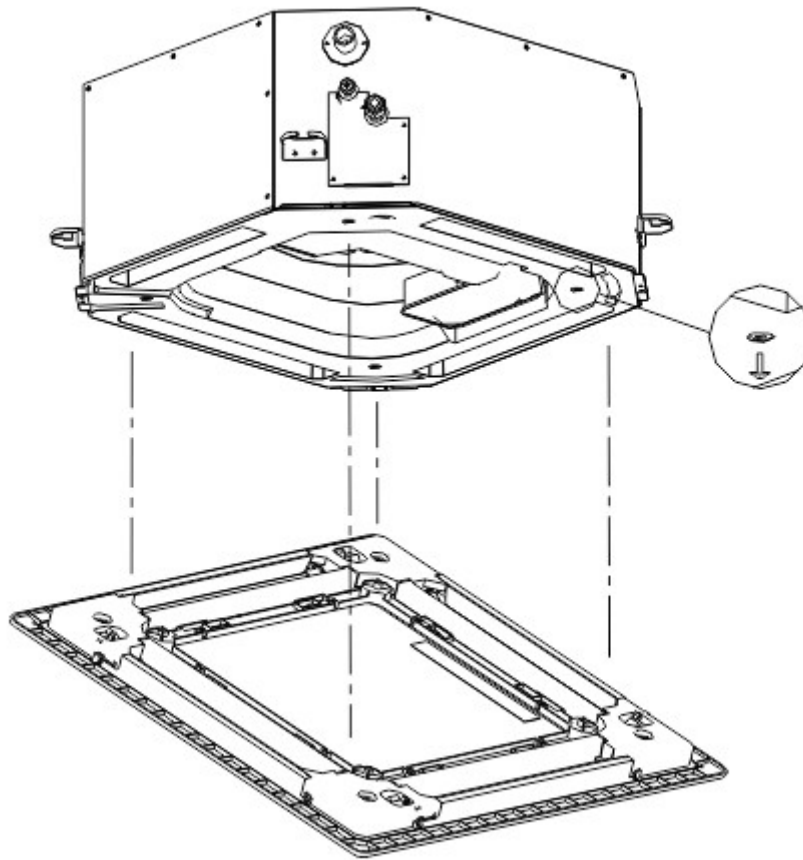
- ◇ When draining multiple units into a common drain line, this common drain should be installed about 100mm below each units drain outlet, as shown in the drawing.



- ◇ When finish installation please carry out the drainage test to ensure that the water flow through the pipeline fluently, and carefully observe the junction to ensure that there is no water leakage. If the unit is installed in the newly built house, strongly recommend that this test taken before the ceiling installation. Even it is the heating only unit, this test is unavoidable.

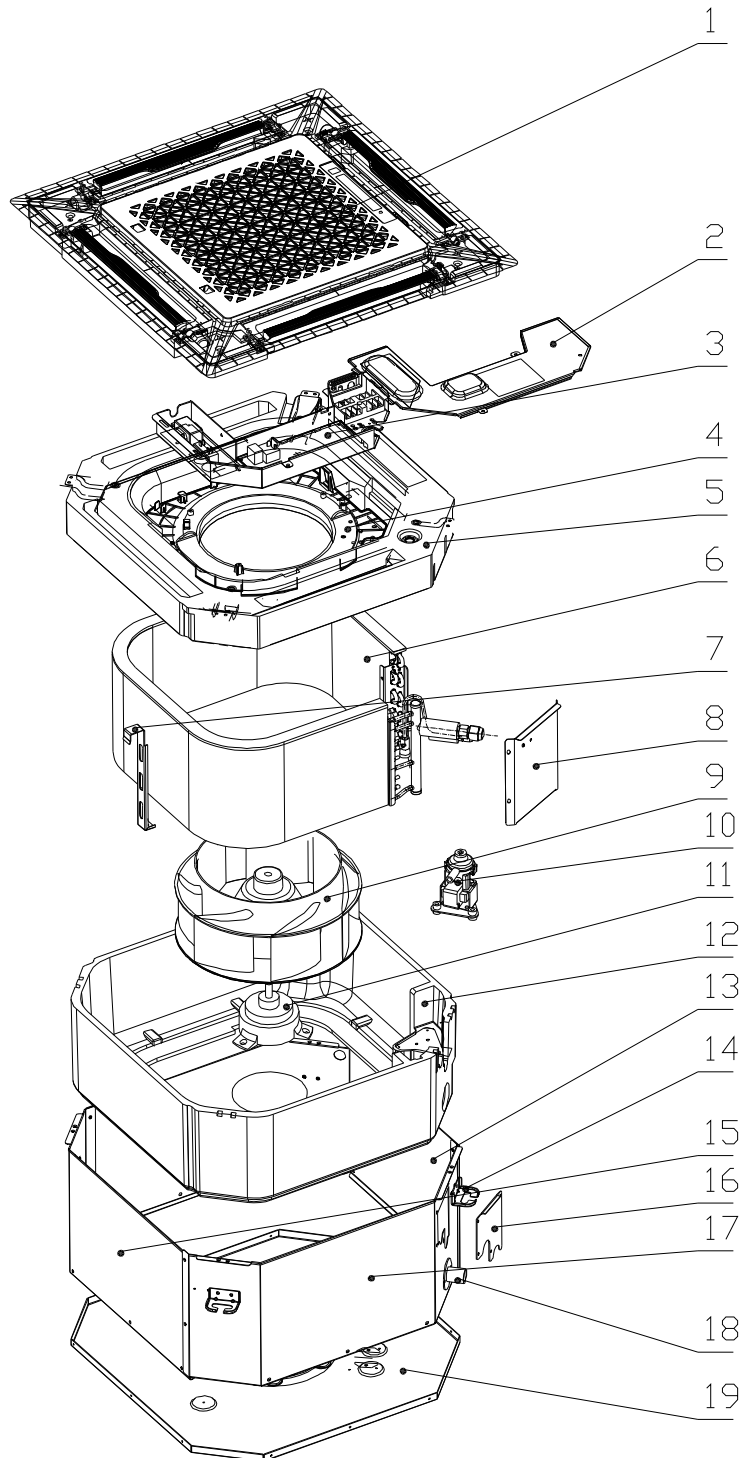
6.7 Panel installation

As to the MB13 panel please refer to the following picture, the panel has four hooks which attach to corresponding hangers on the unit and the panel should be positioned using these first. The panel is then fixed into position by four bolts which are accessed through the four corner panels on the grille.



7. Explode view

AMCA-H09/4R1A, AMCA-H12/4R1A, AMCA-H18/4R1A



No.	BOM Code	Part Name	Qty	Remark
1	/	Panel MB13 new	1	
1.1	/	Return-air grille assembly	1	
1.2	/	Air filter	1	
1.3	/	Guide wind vane	4	
1.4	/	Step motor	4	24BYJ48-2
1.5	/	Display board	1	SX-DISP-01
1.6	/	Panel frame assembly	1	
2	/	Electric box cover	1	
3	/	Electric box assembly	1	
3.1	/	Fan capacitor	1	2.5 μ F/450V a.c
3.2	/	PCB	1	QRD-SN3F(18-60)K(485)-SYE1(SY)
3.3	/	Transformer	1	TDB-14-B4B(PTC)
3.4	/	Terminal block	1	600V 2.5mm ²
3.5	/	Coil sensor	1	20K3950 XH2
3.6	/	Air sensor	1	15K3950 XH2
4	/	Drip tray	1	
5	/	Rubber plug	1	
6	/	Evap assembly	1	
7	/	Evap Pot hook	2	
8	/	Evap joint plate	1	
9	/	Blower wheel	1	Φ 283 \times 166
10	/	Drain pump	1	PSB7
10.1	/	Floating sensor switch	1	
10.2	/	Drain pump plate	1	
11	/	Fan motor	1	XD30B
12	/	EPS btm pan	1	
13	/	Boarding A	1	
14	/	Pothook	4	
15	/	Boarding B	1	
16	/	Valve board	1	
17	/	Boarding C	1	
18	/	Plastic drainage pipe	1	
19	/	Btm pan	1	

Ceiling & floor type

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1. Function Introduction

Function	Name	AMCF-H*/4R1		
		09	12	18
Protection Function	Anti-freeze protection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Sensor failure alarm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Error code display function	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable Function	Cooling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	3 fan speed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Auto-restart (optional)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Anti-cold wind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Blow exhaust heat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Timer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opretating display	clock display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	operating mode display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	fan speed display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	defrosting display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	timing on/off display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	sleeping display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Operation mode	Auto operation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Dehumidify operation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Auto defrosting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Ventilation function	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health function	Removable air filter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Specification

Model	Indoor	Unit	AMCF-H09/4R1	AMCF-H12/4R1	AMCF-H18/4R1
Capacity	Cooling	Btu/h	9560(5120-12115)	12285(5800-12625)	18080(8530-19107)
		kW	2.80(1.50-3.55)	3.60(1.70-3.70)	5.3(2.50-5.6)
	Heating	Btu/h	10240(5460-13000)	13306(6930-15080)	19790(10340-24000)
		kW	3.00(1.60-3.81)	3.9(2.03-4.42)	5.8(3.03-7.03)
Electric Data	Power Supply	V~,Hz,P h	220~240,50,1	220~240,50,1	220~240,50,1
	Cooling Power Input	W	80(20-125)	80(20-125)	80(20-125)
	Heating Power Input	W	80(20-125)	80(20-125)	80(20-125)
Fan Motor	Model	/	YSK-25W-4	YSK-25W-4	YSK-40W-4
	Output Power	W	25	25	40
	Capacitor	uF	1.5	1.5	2.5
	Speed (Hi/Mi/Lo)	r/min	1030/866/735	1030/866/735	1250/1100/900
Indoor Coil	Number Of Row	/	2	2	3
	Tube Pitchx Row Pitch	mm	20.5x 12.7	20.5x 12.7	20.5x 12.7
	Fin Pitch	mm	1.6	1.6	1.6
	Fin Material	/	Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube Outside Dia.& Material	mm	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved
	Coil L x H x W	mm	599x246x 25.4	599x246x 25.4	599x246x 38.1
	Heat Exchanging Area	m ²	4.21	4.21	6.32
Air Flow volume		m ³ /h	620/504/441	620/504/441	850/680/595
Sound Pressure Level		dB(A)	39/36/30	39/36/30	43/39/36
Dimension	Net Dim(W*D*H)	mm	929×660×205	929×660×205	929×660×205
	Packing Dim(W*D*H)	mm	1010×720×290	995×710×280	995×710×280
Weight	Net	kg	24	24	25
	Gross	kg	27	27	28
Refrigerant Type		/	R410a	R410a	R410a
Pipe Dia	Liquid Side	mm(inch)	6.35(1/4)	6.35(1/4)	6.35(1/4)
	Gas Side	mm(inch)	12.7(1/2)	12.7(1/2)	12.7(1/2)
	Drainage	mm	20	20	20
Loading Qty	20/40/40H	unit	136/280/315	136/280/315	136/280/315

Note:

1.Cooling capacity test Condition:(27°CDB,19°CWB Indoor/35°CDB,24°CWB Outdoor);

Heating capacity test Condition:(20°CDB Indoor/7°CDB,6°CWB Outdoor);

connecting pipe length: 7.5M.

2.Datas may be changed with unit improvement. We keep the right to change the datas or specifications without prior notice, please follow the datas listed on the nameplate.

3. Capacity amendment

3.1 Running range

Cooling capacity (Btu/h)		9000	12000	18000
Power supply		220-240V~/50Hz		
Voltage		187~253V		
Ambient temperature	Cooling	-10~52°C		
	Heating	-15~24°C		

3.2 Amendment coefficient of cooling capacity under different indoor/outdoor temperature(K1)

Indoor temperature(°C)		Outdoor temperature(DB)					
DB	WB	25	30	35	40	45	50
22	15	0.97	0.92	0.87	0.96	0.77	0.75
24	17	1.03	0.98	0.94	0.89	0.84	0.80
27	19	1.10	1.05	1	0.95	0.90	0.86
29	21	1.16	1.11	1.06	1.02	0.96	0.91
32	23	1.22	1.17	1.13	1.08	1.02	0.98

Actual cooling capacity calculation:

Actual cooling capacity=amendment coefficient of cooling capacity × nominal cooling capacity

——nominal cooling capacity could be found from the performance parameters list

——amendment coefficient of cooling capacity could be found from table above.

3.3 Amendment coefficient of heating capacity under different indoor/outdoor temperature K2

Outdoor temperature(°C)		Indoor temperature(DB)		
DB	WB	15	20	25
-15	-16	0.64	0.59	0.55
-10	-12	0.71	0.66	0.62
-7	-8	0.76	0.72	0.67
-1	-2	0.79	0.74	0.70
2	1	0.81	0.76	0.72
7	6	1.04	1	0.96
10	9	1.10	1.06	1.01
15	12	1.16	1.12	1.07

Actual heating capacity calculation:

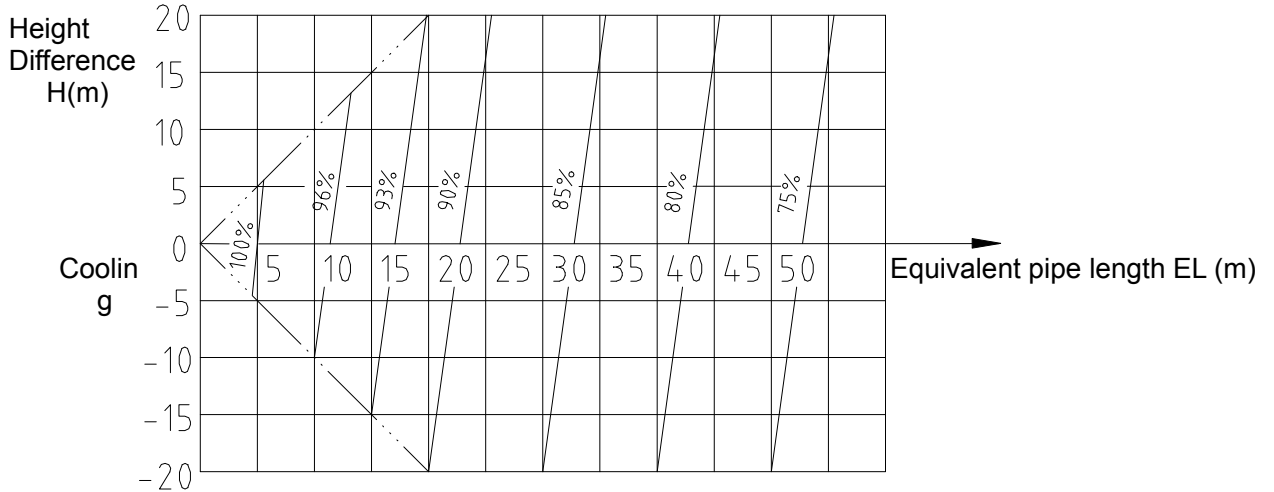
Actual heating capacity=amendment coefficient of heating capacity × nominal heating capacity

——nominal heating capacity could be found from the performance parameters list

—amendment coefficient of heating capacity could be found from table above.

3.4 Amendment coefficients of heating and cooling capacity under different height dropK3

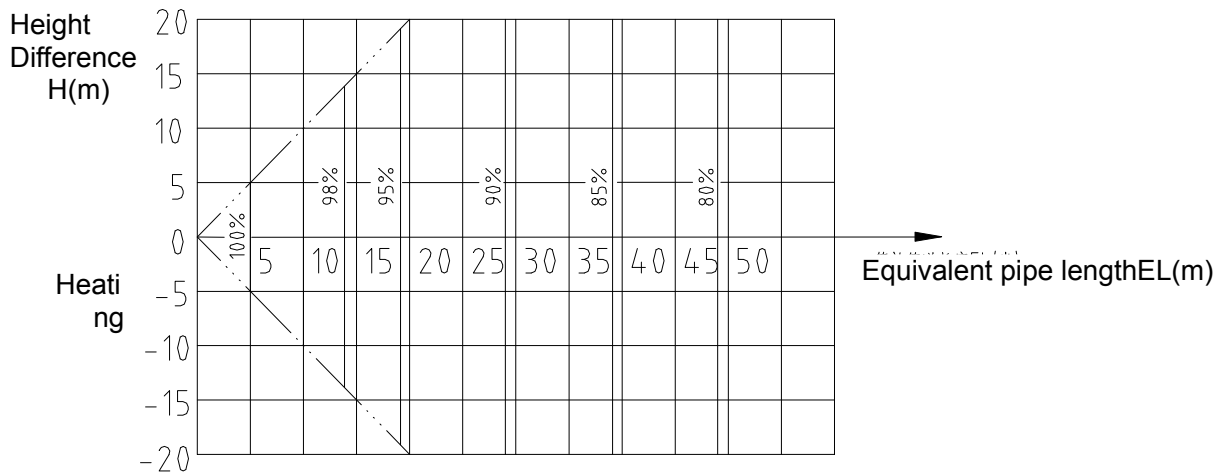
Different Cooling Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

Different Heating Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

3.5 Correction capability

Cooling capacity = nominal cooling capacity xK1xK3

Heating capacity = nominal heating capacity xK2xK3

3.6 Equivalent Pipe length conversion

Equivalent pipe length means converting pipe elbow to straight pipe length after considerate the pressure loss.

Bend and Oil Loop Conversion tablet

Type Pipe Dia.(mm)	Bend	Oil Loop
6.35	0.10	0.7
9.52	0.18	1.3
12.70	0.20	1.5
15.88	0.25	2.0
19.05	0.35	2.4
22.02	0.40	3.0

Equivalent Pipe length L = Actual Pipe length L+ Bend Qty× Equivalent pipe bend length+ Oil Loop Qty × Equivalent Oil Loop length

Sample:

AMCF-H09/4R1 Actual Pipe length is 25 meters, Gas pipe diameter is 9.52mm. If there's 5 bends and 2 oil loops during the installation, then the equivalent pipe length should be:

$$L=25+0.18\times 5+1.3\times 2=28.5(\text{m})$$

◇Specification of Connection Pipe for Indoor Unit and Outdoor Unit

Cooling Capacity(Btu/h)		9000	12000	18000
Connection Pipe (mm)	Liquid Pipe	Φ6.35		
	Gas Pipe	Φ12.7		
oil loops Qty		2		
Max. Bend Qty		5		
Extra R410a per meter when the pipe length is more than 7.5 meter (kg)		0.022		

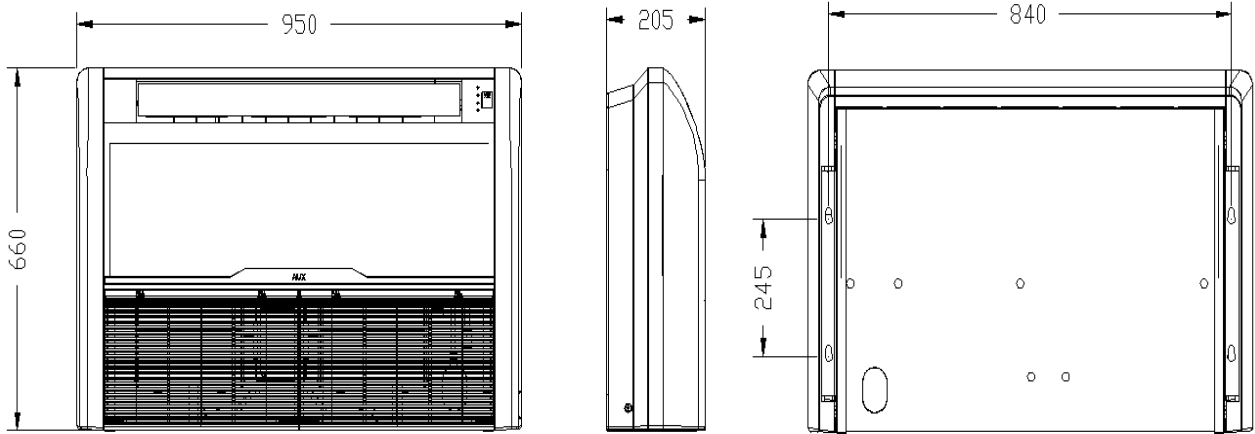
Caution:

1. The standard Pipe length is 7.5m, if the pipe length is less than this then no additional charging is necessary. If the pipe length is more than this then you should charge more refrigerant into the system according to the above Charging Data
2. The thickness of the pipe is 0.6-1.0, bearing pressure is 4.2MPa;
3. If the connection pipe is too long, the cooling capacity and stability would be decreased. And the more bend quantity, the resistance in the piping system would be bigger, then the cooling and heating capacity would be decreased even lead to compressor broken. We suggest you to use the shortest connection pipe according to the pipe length parameter in this manual.If the height

difference between outdoor and indoor unit is more than 5m, an oil trap should be installed in the gas pipe for every 10 meters.

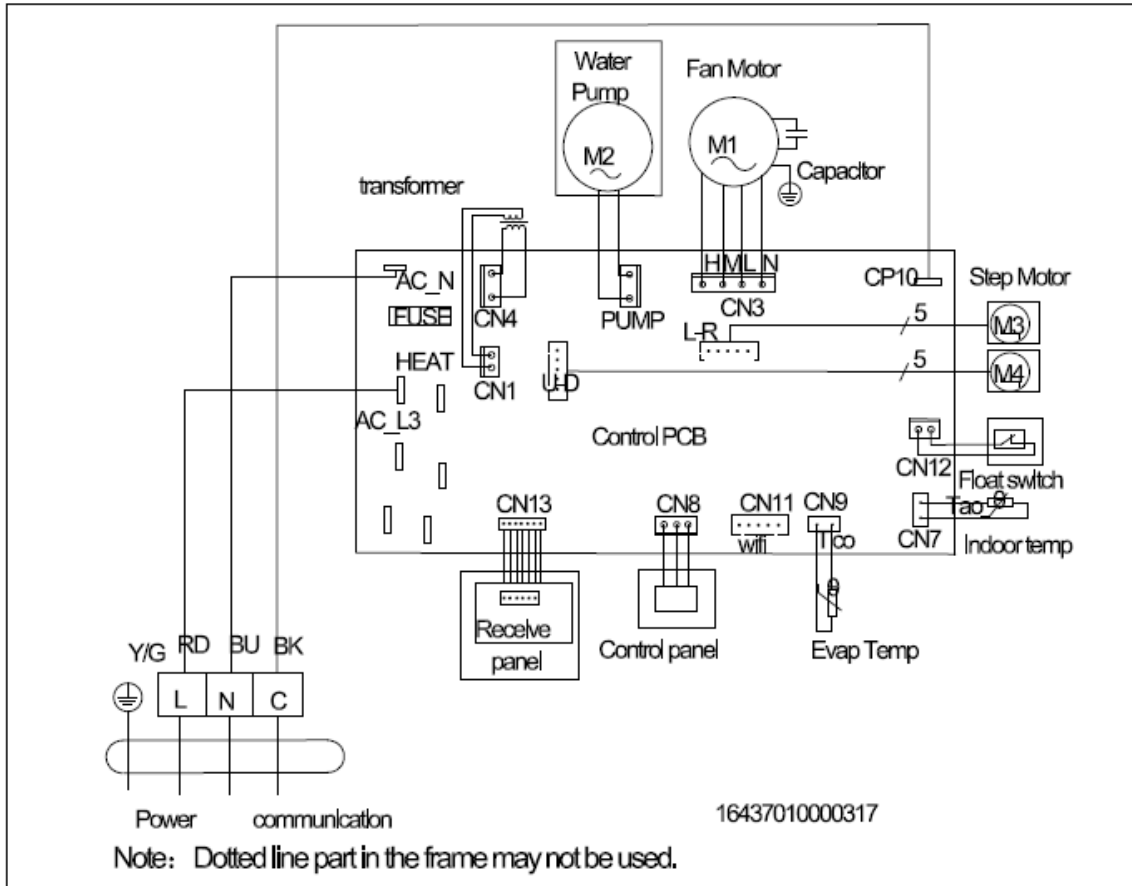
4. Dimension

AMCF-H09/4R1, AMCF-H12/4R1, AMCF-H18/4R1



5. Electrical Diagram

AMCF-H09/4R1, AMCF-H12/4R1, AMCF-H18/4R1



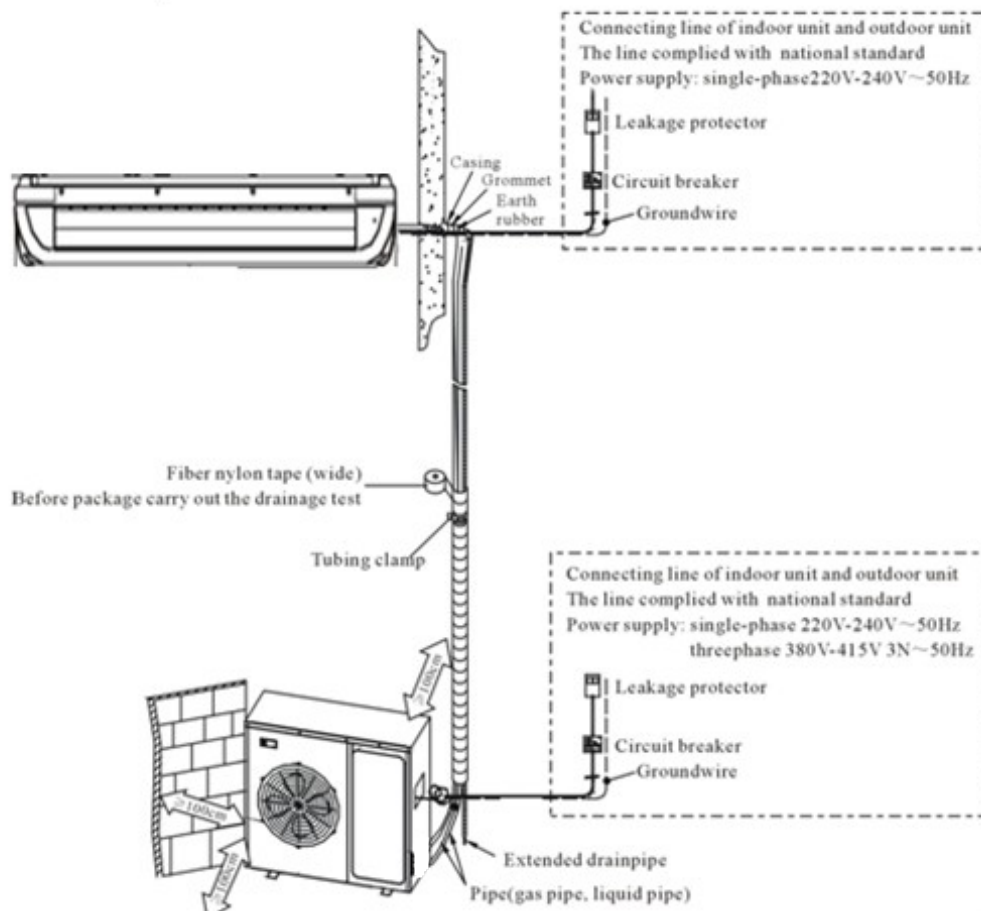
6. Installation

6.1 Preparation and equipments before installation

6.1.1 Please buy following spare parts from your local market before installation

1	Hung bolts M12, 4 pcs
2	Drainage pipe PVC
3	Copper pipe
4	Adhesive belt (big size) 5 pcs, (small size) 5 pcs
5	Heat insulation material used to connect copper pipe (PE foam material, its thickness is more than 8mm)
6	Power cable, electrical wire between indoor and outdoor unit (Must be in accordance with the wire diameter in the wiring diagram)
7	Acetylene cylinders, oxygen cylinders (when longer pipe used it should be welded)
8	One set pipe cut machine. (cut copper pipe)
9	Refrigerant cans, electronic balance (when longer pipe used additional gas should be charged)
10	Pressure gauges, pipe clamp, welding torch, 2B silver electrode
11	Wrench 2 pcs, one of them is with adjustable torque wrench(42N.m,65N.m,100N.mm)
12	Nitrogen cylinder (in order to prevent oxidation when welding, using Nitrogen to replace the air)

6.2 Installation drawing

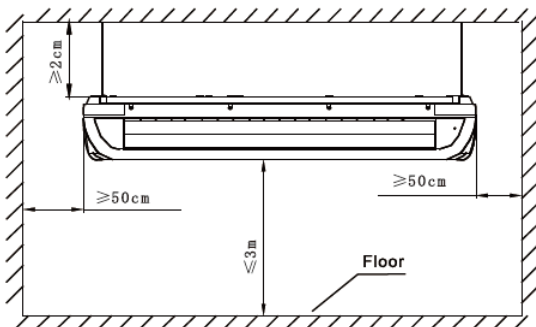


6.3 Installation precaution

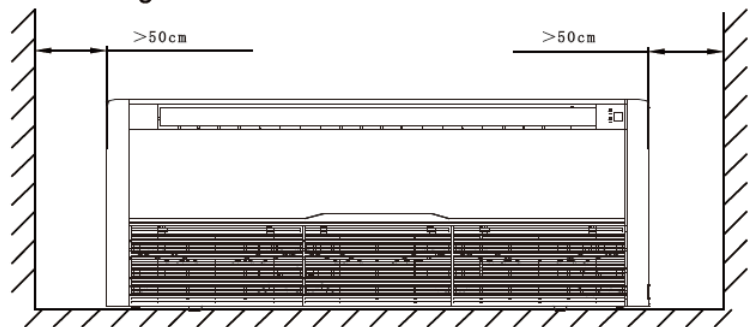
- ◇ Hanging location should be able to support the unit's weight, there should be no increase in noise and vibration. If the hanging location needs reinforcement, it should be reinforced before installation;
- ◇ Choose the space above the ceiling that can put the indoor unit inside;
- ◇ The location should be easy for drainage;
- ◇ The unit should not be installed in the heat source, steam or oil mist source (such as machine room, kitchen, laundry room, mechanical workshop, etc.)
- ◇ Choose the location at least 1 meter away from TV and radio, in order to avoid interference to them
- ◇ There should be certain distance between indoor unit and obstacles for maintenance;
- ◇ In case of leakage of refrigerant, units should immediately stop running, and contact with maintenance personnel in time. There must be no fire at the site, because the refrigerant will turn to harmful gas when get to the fire.

6.4 The distance between indoor unit and obstacle

1. Floor

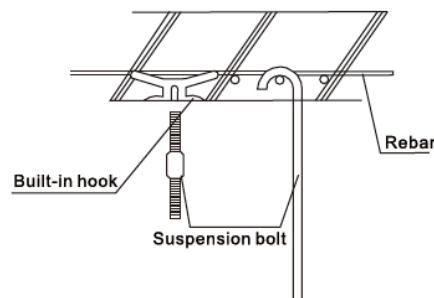


2. Ceiling



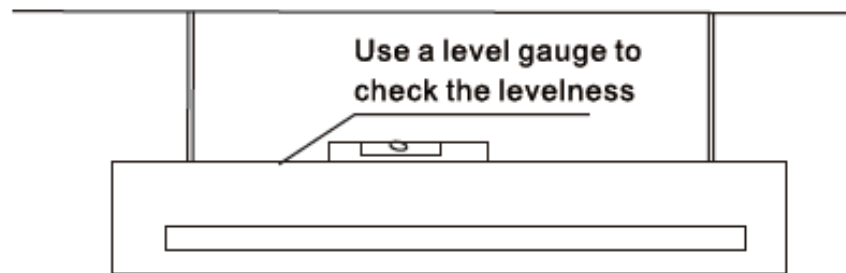
6.5 Indoor unit suspension

- ◇ Select the suspension foundation
- ◇ The suspension foundation is a structure of either wooden frame or reinforced concrete. It must be firm and reliable to bear at least 4 times weight of itself and capable of bearing vibration for long periods;
Fixing of suspension foundation
- ◇ Fix the suspension bolts either as shown in the picture or by a steel or wooden bracket;



- ◇ Adjust the relative position of the suspension hook on the suspension bolt so that the unit can be in level position in all directions. Check with a level gauge after installation to ensure that the indoor unit

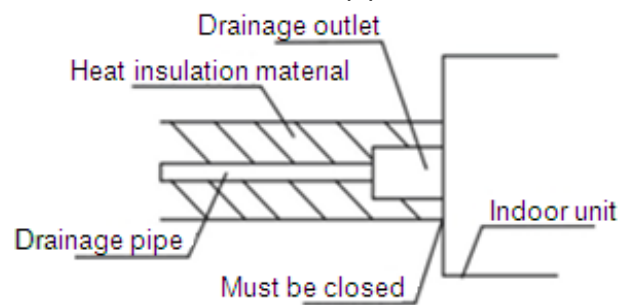
is horizontal, otherwise it will cause water leakage, air leakage etc.



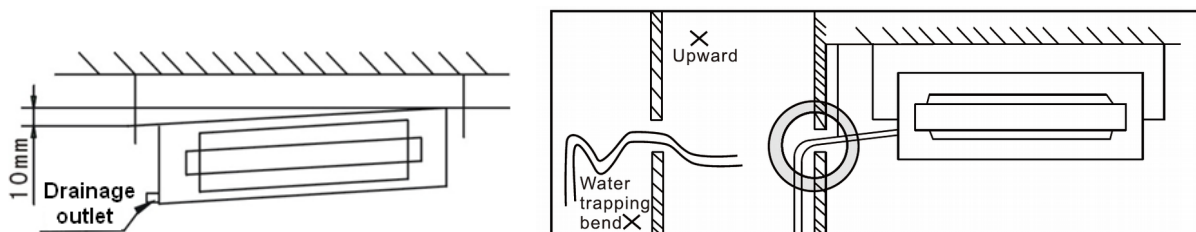
- ◇ Tighten the bolt and ensure that four hooks are in close contact with the nuts and washers, to fix the indoor unit under the ceiling.
- ◇ After the unit is installed ensure it is secure and does not shake or sway.

6.6 Drainage pipe installation

The drainage pipe should be properly insulated to prevent the generation of condensation. Heat insulation material: the thickness of rubber insulation pipe should be more than 8mm



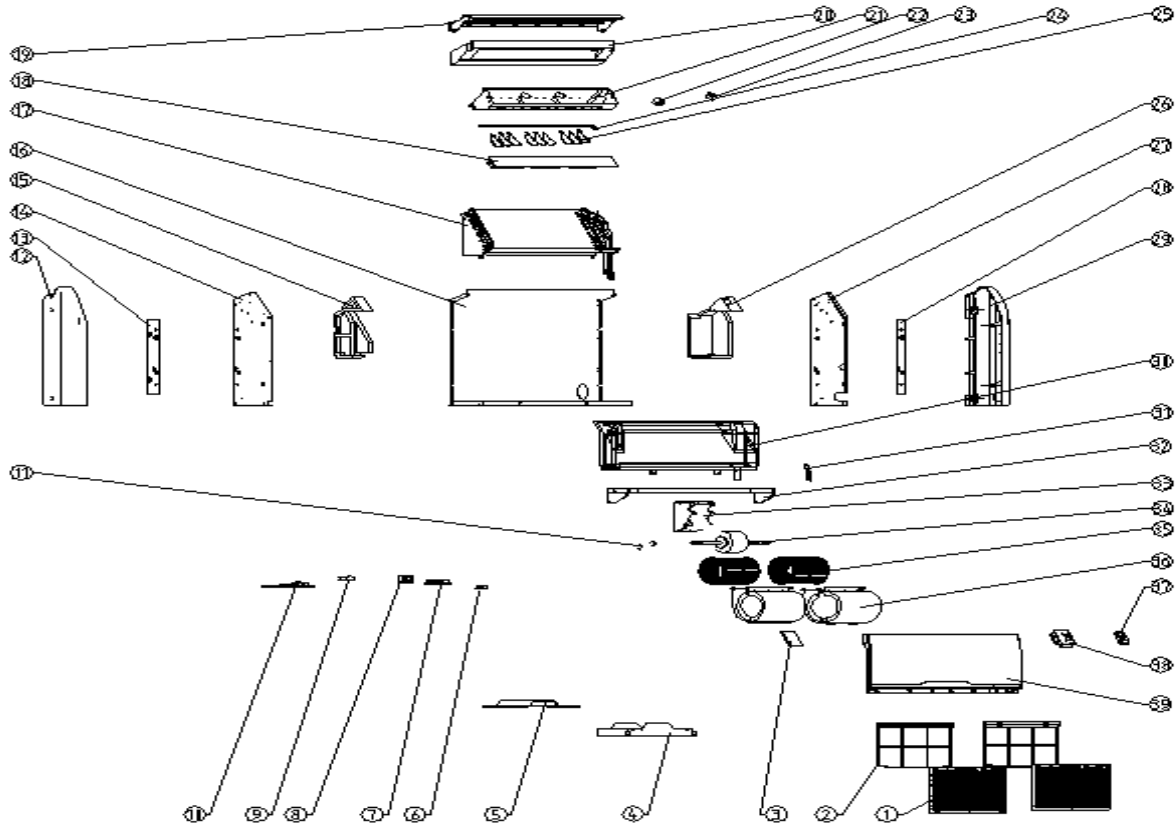
- ◇ Drainage pipe must have a downward gradient (1 / 50 1 / 100) to avoid water backflow or leakage etc.



- ◇ When finish installation please carry out the drainage test to ensure that the water flow through the pipeline fluently, and carefully observe the junction to ensure that there is no water leakage at the junction. If the unit is installed in the newly built house, strongly recommend that this test taken before the Ceiling installation. Even it is the heating only unit, this test is unavoidable.

7. Explode view

AMCF-H09/4R1,AMCF-H12/4R1,AMCF-H18/4R1



No.	Material Code	Part Name	Qty	Remark
1	/	Air-inlet grill	2	
2	/	Air-inlet filter	2	
3	/	Left side deco board	1	
4	/	Control box	1	
	/	Temperature sensor (plastic)	1	
	/	Temperature sensor (copper)	1	
5	/	Control box cover	1	
6	/	Wire clip board	1	
7	/	Terminal block	1	
8	/	Transformer	1	TDB-8-B(PTC)
9	/	Fan capacitor	1	1.5 μ F/450VAC
10	/	PCB	1	QRD-SN1T3-R7F0C001-

				SYE1(SY)
12	/	Left side cover	1	
13	/	Left suspend plate	1	
14	/	Left side bracket asm	1	
15	/	Left EPS	1	
16	/	Back plate	1	
17	/	Evaporator asm	1	
18	/	Plastic air guiding board	1	
19	/	Plastic top cover	1	
20	/	EPS top cover	1	
21	/	Air guide louver asm	1	
22	/	Step motor vertical louver	1	35BYJ46-QC50
23	/	Step motor horizontal louver	1	35BYJ46-QC120
24	/	Joint bar A	1	
25	/	Vertical louver	9	
26	/	Right EPS	1	
27	/	Right side bracket asm	1	
28	/	Right suspend plate	1	
29	/	Right side cover	1	
30	/	Drip tray asm	1	
31	/	Drain pipe	1	
32	/	Motor fixing board	1	
34	/	Fan motor	1	
35	/	Fan wheel	2	
36	/	Top Blower	2	
	/	Btm Blower	2	
37	/	Display board	1	SX-DISP(ZDJ)-02-SYE1
38	/	Display board cover	1	
39	/	Front panel	1	

Low ESP Ducted Type

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1. Function Introduction

Function	Name	AMSD-H*/4R1			
		07	09	12	18
Protection Function	Anti-freeze protection	○	○	○	○
	Sensor failure alarm	○	○	○	○
	Error code display function	○	○	○	○
Comfortable Function	Cooling	○	○	○	○
	Heating	○	○	○	○
	3 fan speed	○	○	○	○
	static pressure adjustable	○	○	○	○
	Auto-restart (optional)	○	○	○	○
	Anti-cold wind	○	○	○	○
	Blow exhaust heat	○	○	○	○
	Timer	○	○	○	○
Opretating display	clock display	○	○	○	○
	operating mode display	○	○	○	○
	fan speed display	○	○	○	○
	defrosting display	○	○	○	○
	timing on/off display	○	○	○	○
	sleeping display	○	○	○	○
Operation mode	Auto operation	○	○	○	○
	Dehumidify operation	○	○	○	○
	Auto defrosting	○	○	○	○
	Ventilation function	○	○	○	○
Health function	Removable air filter	○	○	○	○
	fresh air function preserved	○	○	○	○

2. Specification

Model	Indoor	Unit	AMSD-H07/4R1	AMSD-H09/4R1	AMSD-H12/4R1	AMSD-H18/4R1
Capacity	Cooling	Btu/h	7506(3855-9220)	8872(5120-12115)	12280(5835-13135)	17400(8530-19790)
		kW	2.20(1.13-2.70)	2.60(1.50-3.55)	3.60(1.71-3.85)	5.10(2.50-5.80)
	Heating	Btu/h	8530(4575-10820)	9895(5800-12450)	13650(6480-13375)	19790(9690-21835)
		kW	2.50(1.34-3.17)	2.9(1.70-3.65)	4.00(1.90-3.92)	5.8(2.84-6.40)
Electric Data	Power Supply	V~,Hz,Ph	220~240,50,1	220~240,50,1	220~240,50,1	220~240,50,1
	Cooling Power Input	W	45	45	75	137
	Heating Power Input	W	45	45	75	137
Fan Motor	Model	/	FP20A	FP20A	FP25A	FP40A
	Output Power	W	20	20	25	40
	Capacitor	uF	1.5	1.5	2	3
	Speed (Hi/Mi/Lo)	r/min	1060/790/610/510	1060/790/610/510	1060/890/800/700	1160/1070/940/800
Indoor Coil	Number Of Row	/	2	2	2	2
	Tube x Row Pitch	mm	20.5x 12.7	20.5x 12.7	20.5x 12.7	20.5x 12.7
	Fin Pitch	mm	1.4	1.4	1.4	1.4
	Fin Material	/	Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube Dia.& Material	mm	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved
	Coil L x H x W	mm	640x205x 25.4	640x205x 25.4	640x205x 25.4	960x205x 25.4
	Heat Exchange Area	m ²	4.24	4.24	4.24	6.36
Air Volume		m ³ /h	420/336/294	420/336/294	580/464/406	860/688/602
Sound Pressure Noise Level		dB(A)	30/26/23	30/26/23	32/28/25	38/35/32
Dimension	Net Dim (W*D*H)	mm	840×460×185	840×460×185	840×460×185	1160×460×185
	Packing Dim(W*D*H)	mm	1030×545×250	1030×545×250	1030×545×250	1350×545×250
Weight	Net	kg	16.5	16.5	17.5	21
	Gross	kg	20	20	21	26
Refrigerant Type		/	R410a	R410a	R410a	R410a
Pipe Dia	Liquid Side	mm(inch)	6.35(1/4)	6.35(1/4)	6.35(1/4)	6.35(1/4)
	Gas Side	mm(inch)	9.52(3/8)	9.52(3/8)	12.7(1/2)	12.7(1/2)
	Drainage	mm	16.5	16.5	16.5	16.5
Loading Qty	20/40/40H	unit	168/344/387	168/344/387	168/344/387	144/297/330

- Note:**
- Cooling capacity test Condition:(27°CDB,19°CWB Indoor/35°CDB,24°CWB Outdoor); Heating capacity test Condition:(20°CDB Indoor/7°CDB,6°CWB Outdoor); connecting pipe length: 7.5M.
 - Data may be changed with unit improvement. We keep the right to change the data or specifications without prior notice, please follow the data listed on the nameplate.

3. Capacity amendment

3.1 Running range

Cooling capacity (Btu/h)		7000	9000	12000	18000
Power supply		220-240V~/50Hz			
Voltage		187~253V			
Ambient temperature	Cooling	-10~52°C			
	Heating	-15~24°C			

3.2 Amendment coefficient of cooling capacity under different indoor/outdoor temperature K1

Indoor temperature(°C)		Outdoor temperature(DB)					
DB	WB	25	30	35	40	45	50
22	15	0.97	0.92	0.87	0.96	0.77	0.75
24	17	1.03	0.98	0.94	0.89	0.84	0.80
27	19	1.10	1.05	1	0.95	0.90	0.86
29	21	1.16	1.11	1.06	1.02	0.96	0.91
32	23	1.22	1.17	1.13	1.08	1.02	0.98

Actual cooling capacity calculation:

Actual cooling capacity=amendment coefficient of cooling capacity × nominal cooling capacity

——nominal cooling capacity could be found from the performance parameters list

——amendment coefficient of cooling capacity could be found from table above.

3.3 Amendment coefficient of heating capacity under different indoor/outdoor temperature K2

Outdoor temperature(°C)		Indoor temperature(DB)		
DB	WB	15	20	25
-15	-16	0.64	0.59	0.55
-10	-12	0.71	0.66	0.62
-7	-8	0.76	0.72	0.67
-1	-2	0.79	0.74	0.70
2	1	0.81	0.76	0.72
7	6	1.04	1	0.96
10	9	1.10	1.06	1.01
15	12	1.16	1.12	1.07

Actual heating capacity calculation:

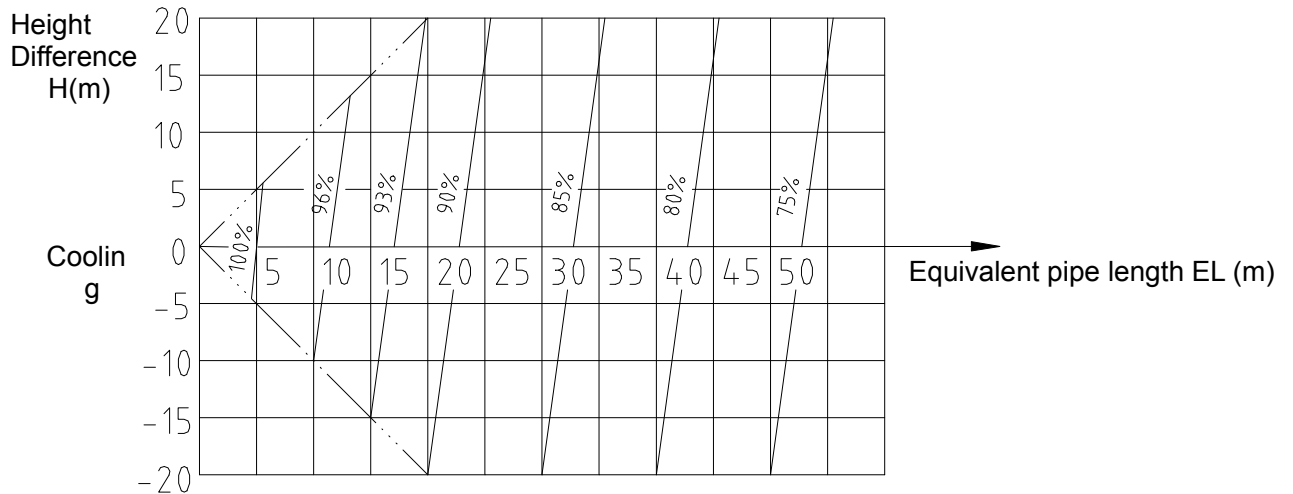
Actual heating capacity=amendment coefficient of heating capacity × nominal heating capacity

——nominal heating capacity could be found from the performance parameters list

——amendment coefficient of heating capacity could be found from table above.

3.4 Amendment coefficients of heating and cooling capacity under different height drop K3

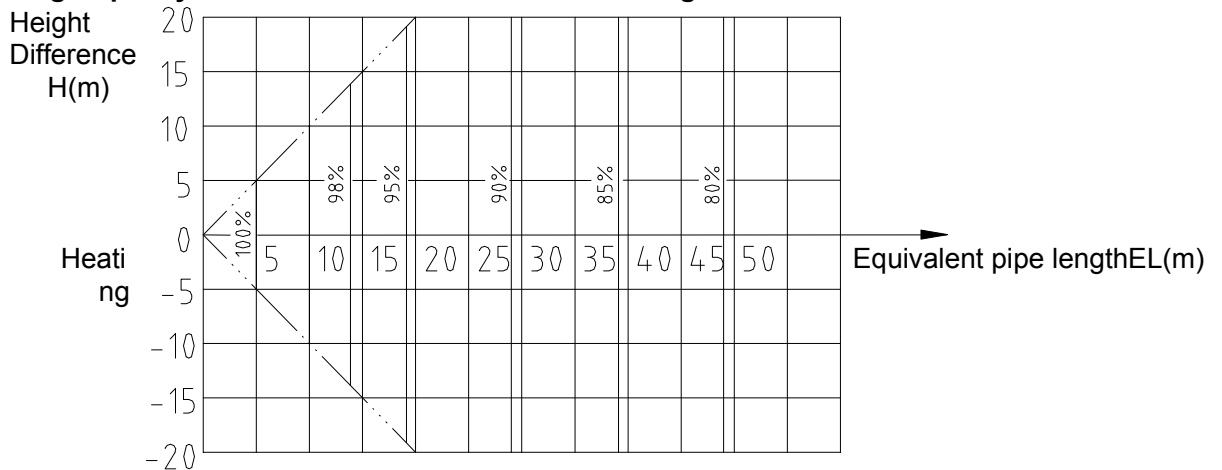
Different Cooling Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

Different Heating Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

3.5 Correction capability

Cooling capacity = nominal cooling capacity × K1 × K3

Heating capacity = nominal heating capacity × K2 × K3

3.6 Equivalent Pipe length conversion

Equivalent pipe length means converting pipe elbow to straight pipe length after considerate the pressure loss.

1. Bend and Oil Loop Conversion tablet

AUX DC Inverter Free Match 50HZ R410ALow ESP Ducted type

Pipe Dia.(mm)	Type	Bend	Oil Loop
6.35		0.10	0.7
9.52		0.18	1.3
12.70		0.20	1.5
15.88		0.25	2.0
19.05		0.35	2.4
22.02		0.40	3.0

Equivalent Pipe length L = Actual Pipe length L+ Bend Qty× Equivalent pipe bend length+ Oil Loop Qty × Equivalent Oil Loop length

Sample:

AMSD-H09/4R1 Actual Pipe length is 25 meters, Gas pipe diameter is 9.52mm. If there's 5 bends and 2 oil loops during the installation, then the equivalent pipe length should be:

$$L=25+0.18\times 5+1.3\times 2=28.5(m)$$

◇ **Specification of Connection Pipe for Indoor Unit and Outdoor Unit**

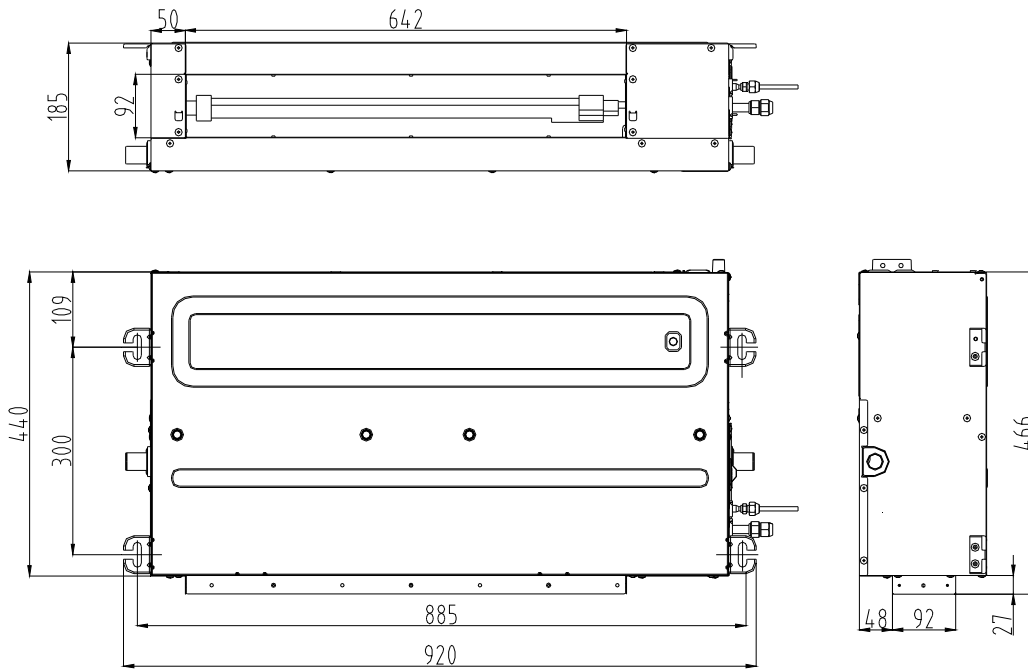
Cooling Capacity(Btu/h)		7000	9000	12000	18000
Connection Pipe (mm)	Liquid Pipe	Φ6.35			
	Gas Pipe	Φ9.52		Φ12.7	
oil loops Qty		2			
Max. Bend Qty		5			
Extra R410a per meter when the pipe length is more than 7.5 meter (kg)		0.022			

Caution:

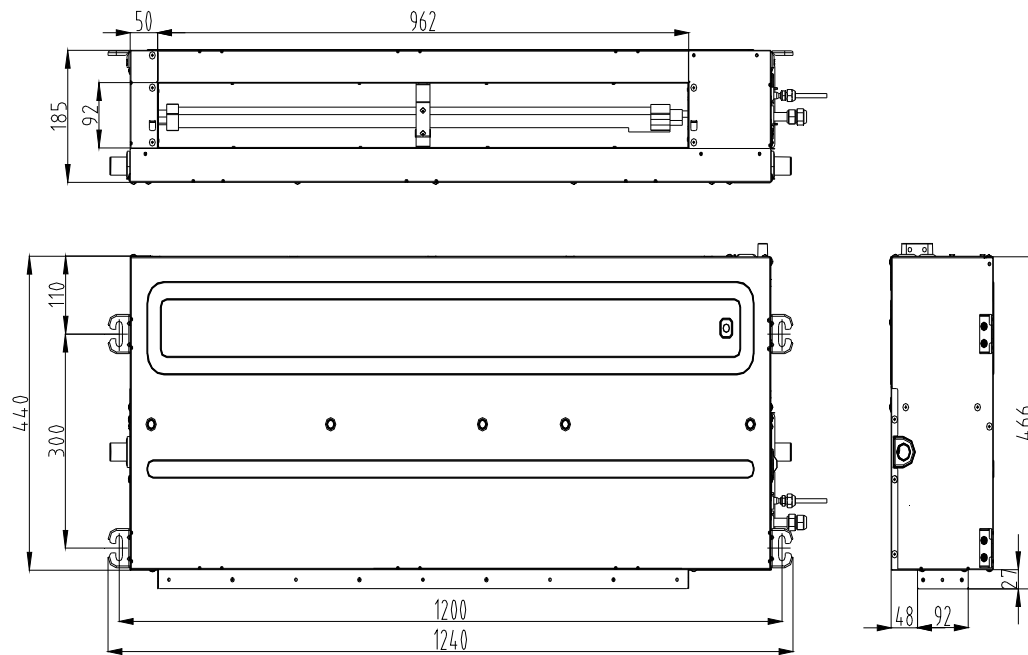
1. The standard Pipe length is 7.5m, if the pipe length is less than this then no additional charging is necessary. If the pipe length is more than this then you should charge more refrigerant into the system according to the above Charging Data
2. The thickness of the pipe is 0.6-1.0, bearing pressure is 4.2MPa;
3. If the connection pipe is too long, the cooling capacity and stability would be decreased. And the more bend quantity, the resistance in the piping system would be bigger, then the cooling and heating capacity would be decreased even lead to compressor broken. We suggest you to use the shortest connection pipe according to the pipe length parameter in this manual. If the height difference between outdoor and indoor unit is more than 5m, an oil trap should be installed in the gas pipe for every 10 meters.

4. Dimension

AMSD-H07/4R1,AMSD-H09/4R1,AMSD-H12/4R1

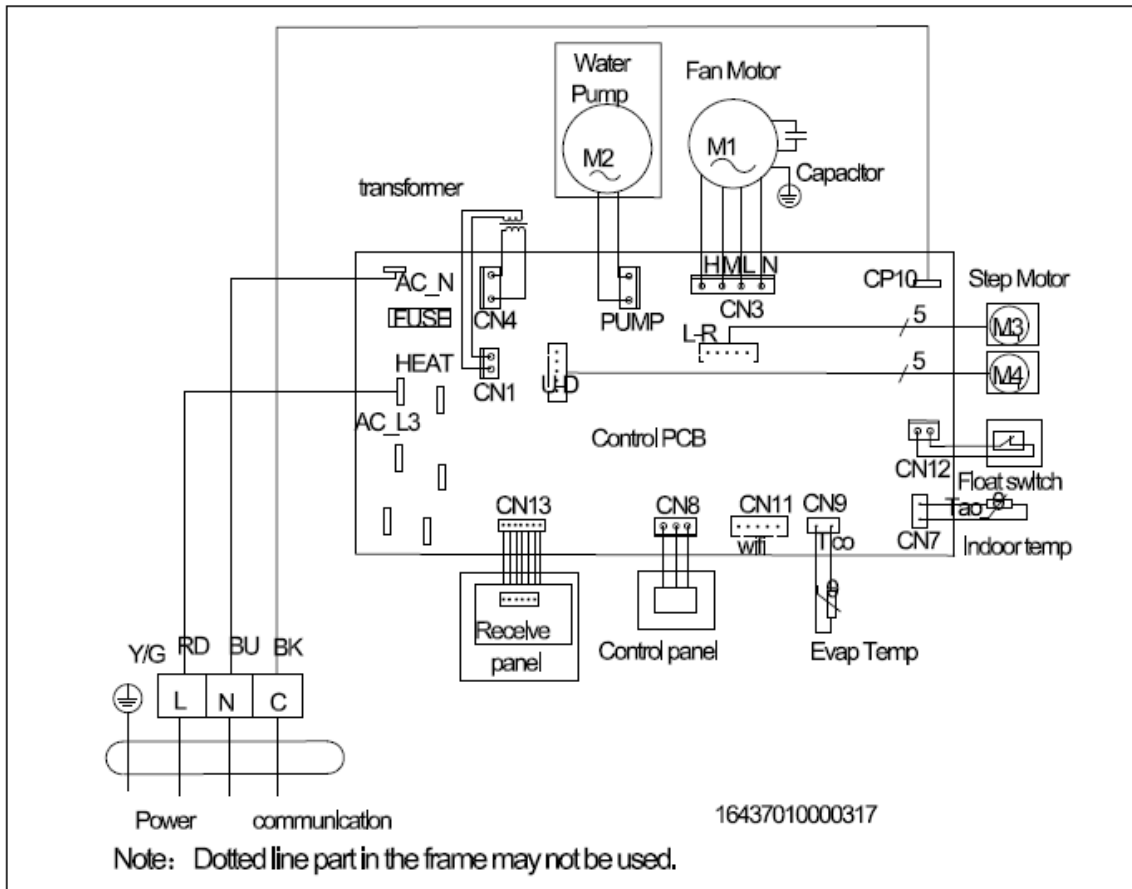


AMSD-H18/4R1



5. Electrical wiring and connection

AMSD-H07/4R1, AMSD-H094R1, AMSD-H12/4R1, AMSD-H18/4R1



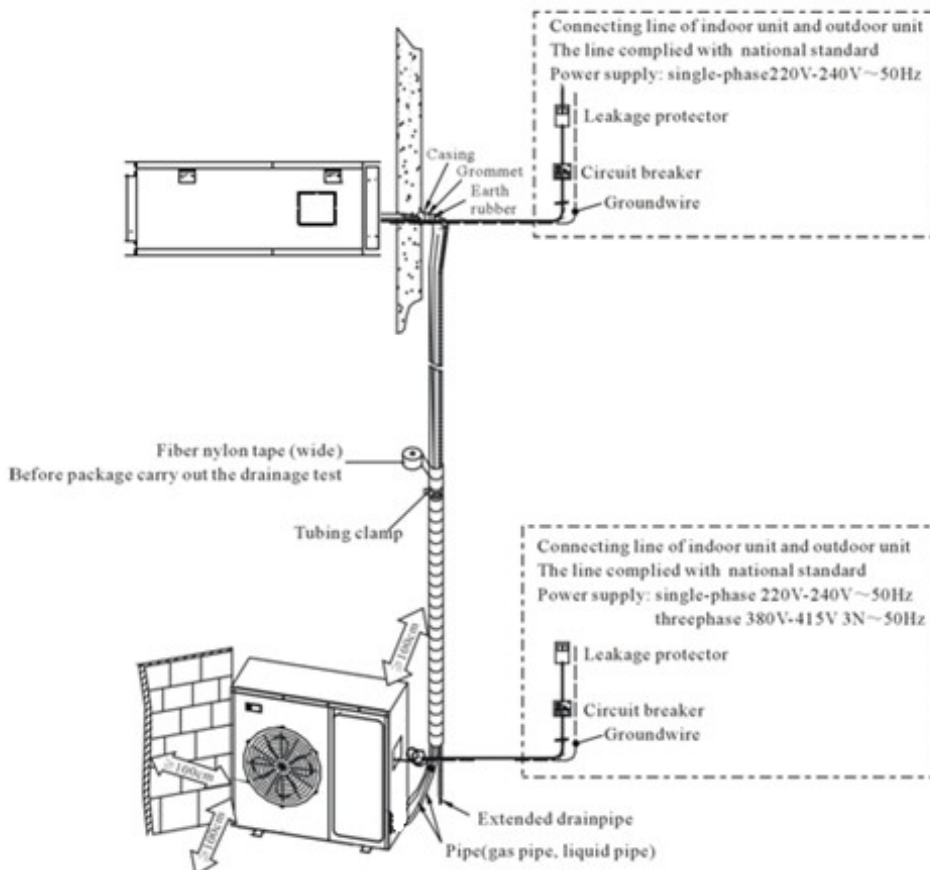
6. Installation

6.1 Preparation and equipment before installation

6.1.1 Please buy following spare parts from your local market before installation

1	Hung bolts M12, 4 pcs
2	Drainage pipe PVC
3	Copper pipe
4	Adhesive belt (big size) 5 pcs, (small size) 5 pcs
5	Heat insulation material used to connect copper pipe (PE foam material, its thickness is more than 8mm)
6	Power cable, electrical wire between indoor and outdoor unit(Must be in accordance with the wire diameter in the wiring diagram)
7	Acetylene cylinders, oxygen cylinders (when longer pipe used it should be welded)
8	One set pipe cut machine. (cut copper pipe)
9	Refrigerant cans, electronic balance (when longer pipe used additional gas should be charged)
10	Pressure gauges, pipe clamp, welding torch, 2B silver electrode
11	Wrench 2 pcs, one of them is with adjustable torque wrench(42N.m,65N.m,100N.mm)
12	Nitrogen cylinder (in order to prevent oxidation when welding, using Nitrogen to replace the air)

6.2 Installation diagram

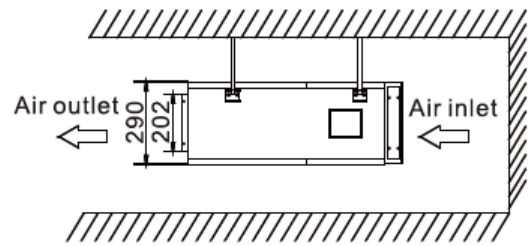
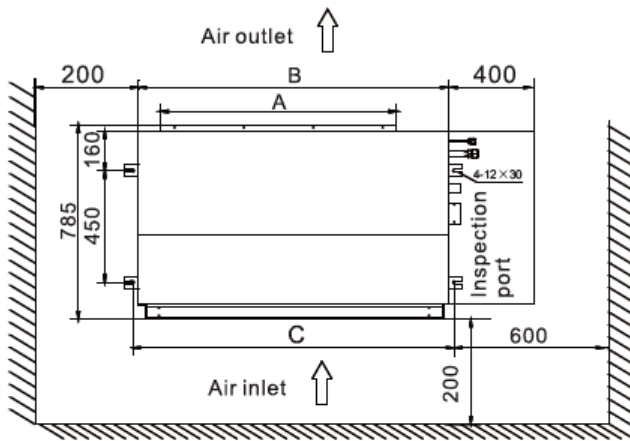


6.3 Installation precaution

- ◇ Hanging location should be able to support the unit's weight, there should be no increase in noise and vibration. If the hanging location needs reinforcement, it should be reinforced before installation;
 - ◇ Choose the space above the ceiling that can put the indoor unit inside;
 - ◇ The location should be easy for drainage;
 - ◇ The unit should not be installed in the heat source, steam or oil mist source (such as machine room, kitchen, laundry room, mechanical workshop, etc.)
 - ◇ Choose the location at least 1 meter away from TV and radio, in order to avoid interference to them
 - ◇ There should be certain distance between indoor unit and obstacles for maintenance;
- In case of leakage of refrigerant, units should immediately stop running, and contact with maintenance personnel in

time. There must be no fire at the site, because the refrigerant will turn to harmful gas when get to the fire.

6.4 The distance between indoor unit and obstacle



Type	A	B	C
7000BTU			
9000BTU	642	840	880
12000BTU			
18000BTU	962	1160	1200

6.5 Indoor unit suspension

◇Select the suspension foundation

The suspension foundation is a structure of either wooden frame or reinforced concrete. It must be firm and reliable to bear at least 4 times weight of itself and capable of bearing vibration for long periods;

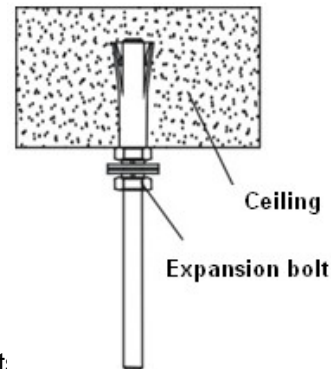
◇Fixing of suspension foundation

Fix the suspension bolts either as shown in the picture or by a steel or wooden bracket;

◇Adjust the relative positions of the suspension hooks to ensure the indoor unit is level in all directions. Use a spirit level to ensure this, otherwise water leakage, air leakage etc. will be resulted;

◇Tighten the nuts and ensure that the hooks are tightly connected to the nut of virtual hanging;

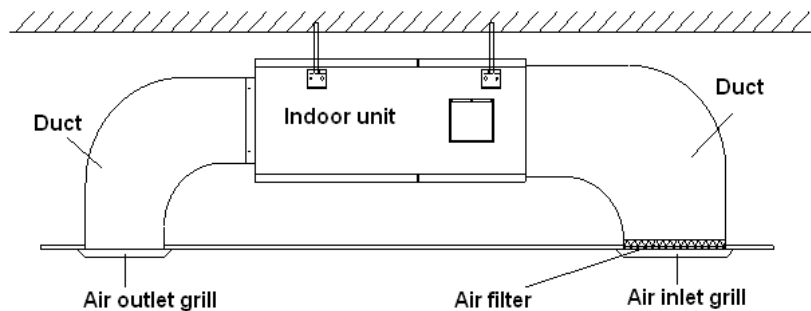
◇After the unit is installed ensure it is secure and does not shake or sway.



o phenomenon

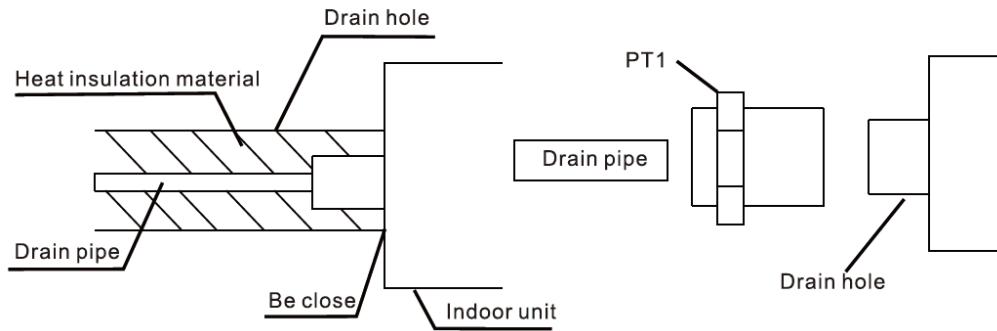
6.6 Duct pipeline installation

◇Using canvas to connect between indoor unit and duct pipeline, in order to save unnecessary vibration, as to the detail connection method please refer to the following picture.



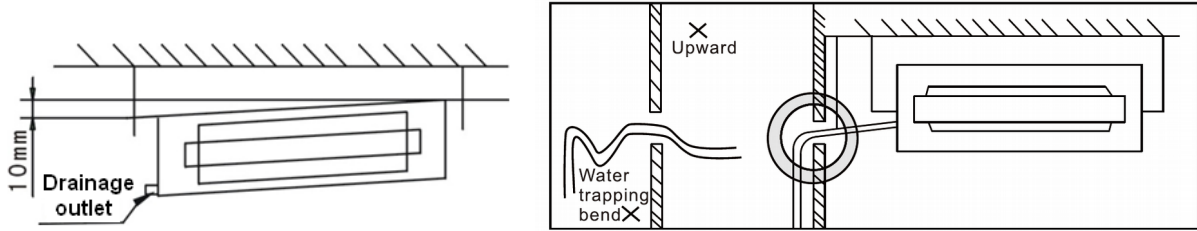
6.7 Drainage pipe

◇Drainage pipes must be wrapped with heat insulation materials, otherwise it will cause frost or droplets, see picture as follows:



Heat insulation material: rubber insulation pipe with the thickness of more than 8mm

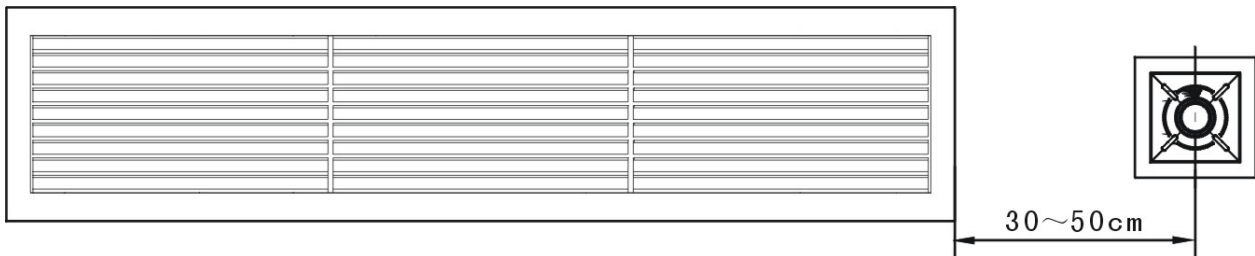
◇ Drainage pipe must have a downward gradient (1 / 50 1 / 100) to avoid water backflow or leakage etc.



◇ When finish installation please carry out the drainage test to ensure that the water flow through the pipeline fluently, and carefully observe the junction to ensure that there is no water leakage at the junction. If the unit is installed in the newly built house, strongly recommend that this test taken before the CFiling installation. Even it is the heating only unit, this test is unavoidable.

6.8 Remote controller receiver

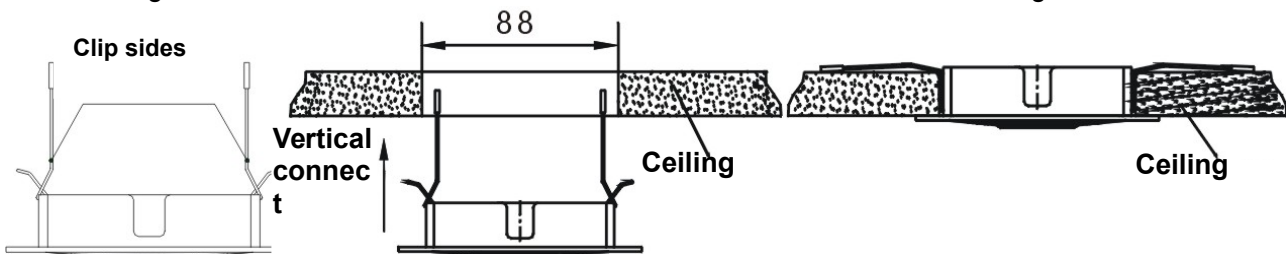
◇ Installation site: recommend that the receiver is mounted with the distance of 30~50 cm to the indoor unit air outlet (on your choice as well), while must ensure that the receiver can get the signal that the remote controller sends, please refer to the following installation picture:



◇ Mounting hole set up: please use certain instrument to dig a square hole with 88*88mm on the ceiling

◇ Remote controller receiver installation.

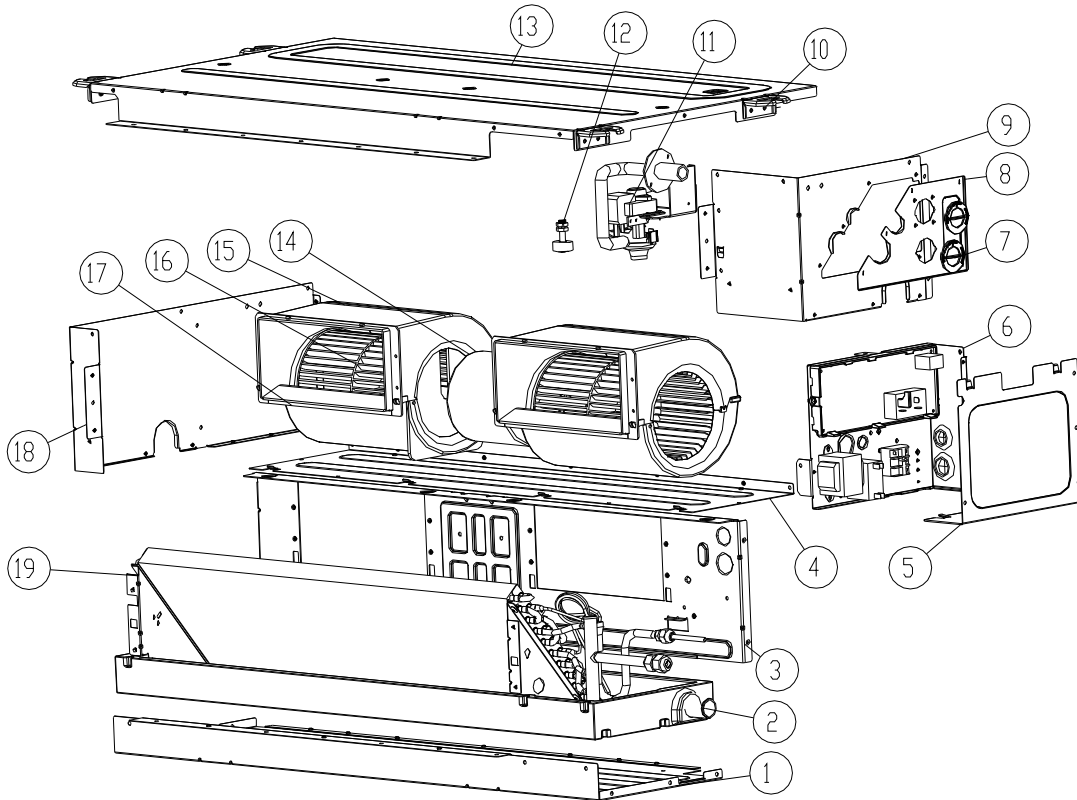
Hold the two sides (with clip sides) of the receiver, set the spring clip in the vertical way then put it into the mounting hole, if the two sides of the receiver is in the same level with the ceiling the installation is finished.



◇ Signal line connection: connect the wire of remote controller receiver to the CN-DISP terminal board on PCB of indoor unit wire box then fix it.

7. Explode view

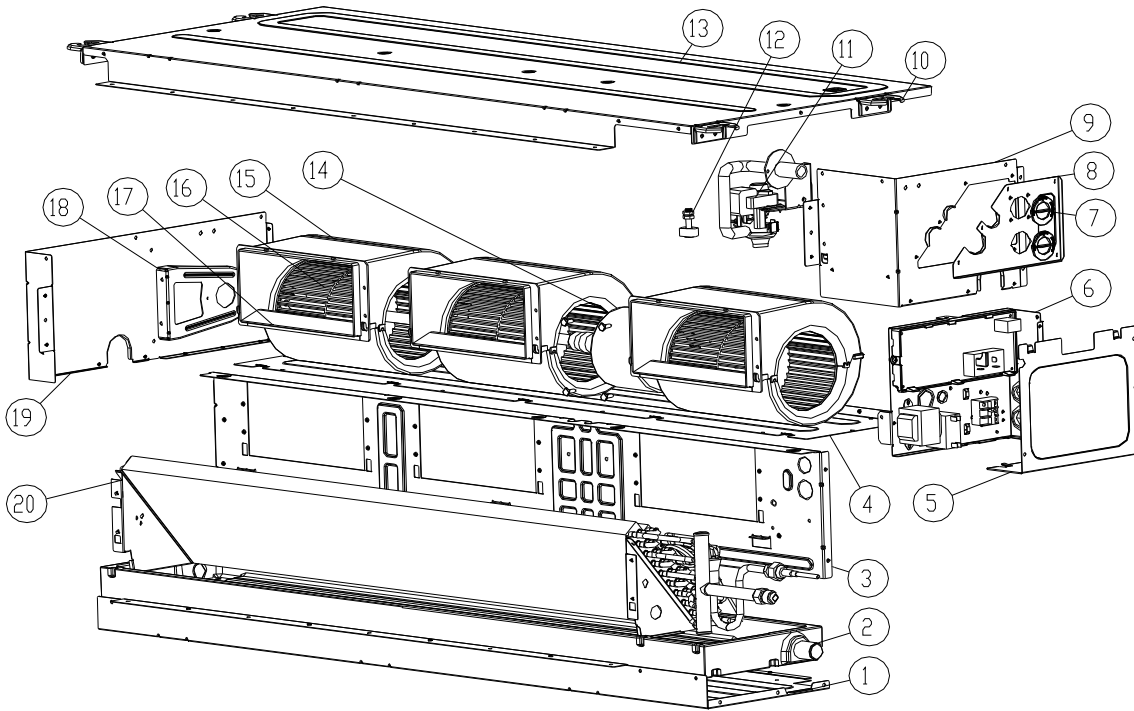
AMSD-H07/4R1,AMSD-H09/4R1,AMSD-H12/4R1



N0.	Material code	Part Name	Qty	Remark
1	/	Btm pan A	1	
2	/	Drip tray asm	1	
3	/	Bracket fan blower	1	
4	/	Btm pan B	1	
5	/	Cover elec Box	1	
6	/	Asm control box	1	
6.1	/	Main PCB	1	QRD-SN1T3-R7F0C001-SYE1(SY)
6.2	/	Terminal block	1	
6.3	/	Transformer	1	TDB-8-B(PTC)
6.4	/	Fan capacitor	1	1.5μF/450VAC
6.5	/	Air sensor 15K3950 XH2 0.5m	1	
6.6	/	Coil sensor 20K3950 XH2 0.5m	1	
6.7	/	Wire clip	1	
7	/	Knob	2	
8	/	Plate valve	1	
9	/	Plate right Side	1	
10	/	Plate hanging	4	
11	/	Drain pump	1	optional
12	/	Switch floating senor	1	optional
13	/	Plate top cover	1	
14	/	Fan motor	1	FP20A
15	/	Top blower	2	
16	/	Fan blower	2	
17	/	Btm blower	2	
18	/	Plate left Side	1	
19	/	Evap asm	1	
20	/	Filter	1	

AMSD-H18/4R1

AUX DC Inverter Free Match 50HZ R410ALow ESP Ducted type



N0.	Material code	Part Name	Qty	Remark
1	/	Btm pan A	1	
2	/	Drip tray asm	1	
3	/	Bracket fan blower	1	
4	/	Btm pan B	1	
5	/	Cover elec Box	1	
6	/	Asm control box	1	
6.1	/	Main PCB	1	QRD-SN1T3-R7F0C001-SYE1(SY)
6.2	/	Terminal block	1	
6.3	/	Transformer	1	TDB-8-B(PTC)
6.4	/	Fan capacitor	1	1.5μF/450VAC
6.5	/	Air sensor 15K3950 XH2 0.5m	1	
6.6	/	Coil sensor 20K3950 XH2 0.5m	1	
6.7	/	Wire clip	1	
7	/	Knob	2	
8	/	Plate valve	1	
9	/	Plate right Side	1	
10	/	Plate hanging	4	
11	/	Drain pump	1	optional
12	/	Switch floating sensor	1	optional
13	/	Plate top cover	1	
14	/	Fan motor	1	FP40A
15	/	Top blower	3	
16	/	Fan blower	3	
17	/	Btm blower	3	
18	/	Bracket bearing	1	
19	/	Plate left Side	1	
20	/	Evap asm	1	
21	/	Filter	1	

Wall Mounted Type

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1. Function Introduction



Anti-cold-air (Heat pump only)

When starting the heating operation, the fan speed is regulated automatically from the lowest grade to the preset level, according to the temperature rising of evaporator. The function can prevent cold air blowing out at the beginning of the operation, which avoids the discomfort to the user.



Self-diagnosis function

Monitoring some abnormal operations or parts failures, which happens microcomputer of the air conditioner which switch off and protect the system automatically. Meanwhile, the error or protection code will be displayed on the indoor unit.



24-hour timer

User can set on the timer to turn on or off the air conditioner any time within 24 hours.



Force cooling

This function is convenient when user can't find the remote controller.



Intelligent defrosting

Normal defrost function can only be operated in certain time, but AUX commercial air conditioner's intelligent defrost can start automatically according to the surrounding condition.



Auto restart

If the machine is suddenly shut down during operation, the unit will record the operating mode, and restore to it when the power is on.



Sleep Mode

User can select mode after pressing time-off button, this function will adjust temperature automatically, which makes a comfortable sleep environment and save energy.



Low ambient cooling

The air conditioner with a special built-in low ambient cooling component can be used in temperature as low as -15C for cooling operation.

Function	Name	AMWM-H*/4R1(#)			
		07	09	12	18
Protection Function	Anti-freeze protection	○	○	○	○
	Sensor failure alarm	○	○	○	○
	Error code display function	○	○	○	○
Comfortable Function	Cooling	○	○	○	○
	Heating	○	○	○	○
	3 fan speed	○	○	○	○
	Auto-restart (optional)	○	○	○	○
	Anti-cold wind	○	○	○	○
	Blow exhaust heat	○	○	○	○
	Timer	○	○	○	○
Opretating display	clock display	○	○	○	○
	operating mode display	○	○	○	○
	fan speed display	○	○	○	○
	defrosting display	○	○	○	○
	timing on/off display	○	○	○	○
	sleeping display	○	○	○	○
Operation mode	Auto operation	○	○	○	○
	Dehumidify operation	○	○	○	○
	Auto defrosting	○	○	○	○
	Ventilation function	○	○	○	○
Health function	Removable air filter	○	○	○	○
	fresh air function preserved	○	○	○	○

2. Specification

Model	Indoor	Unit	AMWM-H07/4R1(L)	AMWM-H09/4R1(L)	AMWM-H12/4R1(L)	AMWM-H18/4R1(L)
Capacity	Cooling	Btu/h	7165(3855-9220)	8870(4780-11260)	12285(5800-12625)	17745(8530-19790)
		kW	2.05(1.13-2.70)	2.55(1.40-3.30)	3.60(1.70-3.70)	5.20(2.50-5.80)
	Heating	Btu/h	7510(3340-8530)	9215(4095-10240)	12625(5120-12625)	18085(7680-19790)
		kW	2.15(0.98-2.50)	2.65(1.20-3.00)	3.70(1.50-3.70)	5.0(2.25-5.80)
Electric Data	Power Supply	V~,Hz ,Ph	220 ~ 240,50,1	220 ~ 240,50,1	220 ~ 240,50,1	220 ~ 240,50,1
	Cooling Power	W	40(12 ~ 68)	40(12 ~ 68)	40(12 ~ 68)	63(16 ~ 88)
	Heating Power	W	40(12 ~ 68)	40(12 ~ 68)	40(12 ~ 68)	63(16 ~ 88)
Indoor Fan Motor	Model	/	YYK12-4B	YYK12-4B	YYK12-4B	YYK30-4
	Output Power	W	12	12	12	30
	Capacitor	uF	1.5	1.5	1.5	3
	Speed (Hi/Mi/Lo)	r/min	1030/900/850	1030/900/850	1030/900/850	1230/1080/970
Indoor Coil	Number Of Row	/	2	2	2	2
	Tube x Row Pitch	mm	20.5x 12.7	20.5x 12.7	20.5x 12.7	20.5x 12.7
	Fin Pitch	mm	1.4	1.4	1.4	1.4
	Fin Material	/	Hydrophilic aluminum fin			
	Tube Material	mm	φ7 , Inner grooved			
	Coil L x H x W	mm	602x164x 25.4	602x164x 25.4	602x164x 25.4	722x164x 25.4
	Heat Exchange Area	m ²	5.58	5.58	5.58	5.58
Performance	Air Flow Volume	CFM	969/765/672	969/765/672	969/765/672	1700/1462/1170
		m ³ /h	570/450/395	570/450/395	570/450/395	1000/860/688
	Sound Pressure	dB(A)	40/38/34	40/38/34	42/40/36	45/42/35
Dimension	Net Dim (W*D*H)	mm	800×300×198	800×300×198	800×300×198	970×315×235
	Pack Dim (W*D*H)	mm	835×355×255	835×355×255	835×355×255	1010×370×290
Weight	Net	kg	10	10	10	13
	Gross	kg	11.5	11.5	11.5	16
Refrigerant Type		/	R410a	R410a	R410a	R410a
Pipe Dia	Liquid Side	mm(in ch)	6.35(1/4)	6.35(1/4)	6.35(1/4)	6.35(1/4)
	Gas Side	mm(in ch)	9.52(3/8)	9.52(3/8)	9.52(3/8)	12.7(1/2)
	Drainage	mm	16.5	16.5	16.5	16.5
Loading Qty	20/40/40H	unit	422/830/948	422/830/948	422/830/948	286/588/675

AUX DC Inverter Free Match 50HZ R410A

Free Match outdoor unit

Model	Indoor	Unit	AMWM-H07/4R1(F)	AMWM-H09/4R1(F)	AMWM-H12/4R1(F)	AMWM-H18/4R1(F)
Capacity	Cooling	Btu/h	7165(3855-9220)	8870(4780-11260)	12285(5800-12625)	17745(8530-19790)
		kW	2.05(1.13-2.70)	2.55(1.40-3.30)	3.60(1.70-3.70)	5.20(2.50-5.80)
	Heating	Btu/h	7510(3340-8530)	9215(4095-10240)	12625(5120-12625)	18085(7680-19790)
		kW	2.15(0.98-2.50)	2.65(1.20-3.00)	3.70(1.50-3.70)	5.0(2.25-5.80)
Electric Data	Power Supply	V~,Hz,Ph	220 ~ 240,50,1	220 ~ 240,50,1	220 ~ 240,50,1	220 ~ 240,50,1
	Cooling Power Input	W	40(12 ~ 68)	40(12 ~ 68)	40(12 ~ 68)	63(16 ~ 88)
	Heating Power Input	W	40(12 ~ 68)	40(12 ~ 68)	40(12 ~ 68)	63(16 ~ 88)
Indoor Fan Motor	Model	/	YYK12-4B	YYK12-4B	YYK12-4B	YYK25-4D
	Output Power	W	14	14	14	25
	Capacitor	uF	1.5	1.5	1.5	3
	Speed (Hi/Mi/Lo)	r/min	1130/1000/850	1130/1000/850	1130/1000/850	1130/1000/900
Indoor Coil	a.Number Of Row	/	2	2	2	2
	b.Tube Pitch(a)x Row Pitch(b)	mm	20.5x 12.7	20.5x 12.7	20.5x 12.7	20.5x 12.7
	c.Fin Pitch	mm	1.3	1.3	1.3	1.4
	d.Fin Material	/	Hydrophilic aluminum fin	Hydrophilic aluminum fin	Hydrophilic aluminum fin	Hydrophilic aluminum fin
	e.Tube Outside Dia.And Material	mm	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved
	f.Coil Length x Height x Width	mm	560x286x 25.4	560x286x 25.4	560x286x 25.4	670x328x 25.4
	g.Heat Exchanging Area	m ²	5.46	5.46	5.68	6.57
Performance	Air Flow Volume	CFM	935/816/629	935/816/629	935/816/629	1530/1360/1156
		m ³ /h	550/480/370	550/480/370	550/480/370	900/800/680
	Sound Pressure Noise Level	dB(A)	40/38/34	40/38/34	42/40/36	45/42/35
Dimension	Net Dimension (W*D*H)	mm	750×285×200	750×285×200	750×285×200	900×310×225
	Packing Dimension (W*D*H)	mm	800×345×265	800×345×265	800×345×265	950×380×290
Weight	Net	kg	8	8	8	12
	Gross	kg	10.5	10.5	10.5	14
Refrigerant Type	/		R410a	R410a	R410a	R410a
Pipe Diameter	Liquid Side	mm (inch)	6.35(1/4)	6.35(1/4)	6.35(1/4)	6.35(1/4)
	Gas Side	mm (inch)	9.52(3/8)	9.52(3/8)	9.52(3/8)	12.7(1/2)
	Drainage	mm	16.5	16.5	16.5	16.5
Stuffing Quantity	20/40/40H	unit	432/784/980	432/784/980	432/784/980	296/600/675

Note:

- Cooling capacity test Condition:(27°CDB,19°CWB Indoor/35°CDB,24°CWB Outdoor);
Heating capacity test Condition:(20°CDB Indoor/7°CDB,6°CWB Outdoor);
connecting pipe length: 7.5M.
- Datas may be changed with unit improvement. We keep the right to change the datas or specifications without prior notice, please follow the datas listed on the nameplate.

3. Capacity amendment

3.1 Running range

Cooling capacity (Btu/h)		7000	9000	12000	18000
Power supply		220-240V~/50Hz			
Voltage		187~253V			
Ambient temperature	Cooling	-10~52°C			
	Heating	-15~24°C			

3.2 Amendment coefficient of cooling capacity under different indoor/outdoor temperature K1

Indoor temperature(°C)		Outdoor temperature(DB)					
DB	WB	25	30	35	40	45	50
22	15	0.97	0.92	0.87	0.96	0.77	0.75
24	17	1.03	0.98	0.94	0.89	0.84	0.80
27	19	1.10	1.05	1	0.95	0.90	0.86
29	21	1.16	1.11	1.06	1.02	0.96	0.91
32	23	1.22	1.17	1.13	1.08	1.02	0.98

Actual cooling capacity calculation:

Actual cooling capacity=amendment coefficient of cooling capacity × nominal cooling capacity

——nominal cooling capacity could be found from the performance parameters list

——amendment coefficient of cooling capacity could be found from table above.

3.3 Amendment coefficient of heating capacity under different indoor/outdoor temperature K2

Outdoor temperature(°C)		Indoor temperature(DB)		
DB	WB	15	20	25
-15	-16	0.64	0.59	0.55
-10	-12	0.71	0.66	0.62
-7	-8	0.76	0.72	0.67
-1	-2	0.79	0.74	0.70
2	1	0.81	0.76	0.72
7	6	1.04	1	0.96
10	9	1.10	1.06	1.01
15	12	1.16	1.12	1.07

Actual heating capacity calculation:

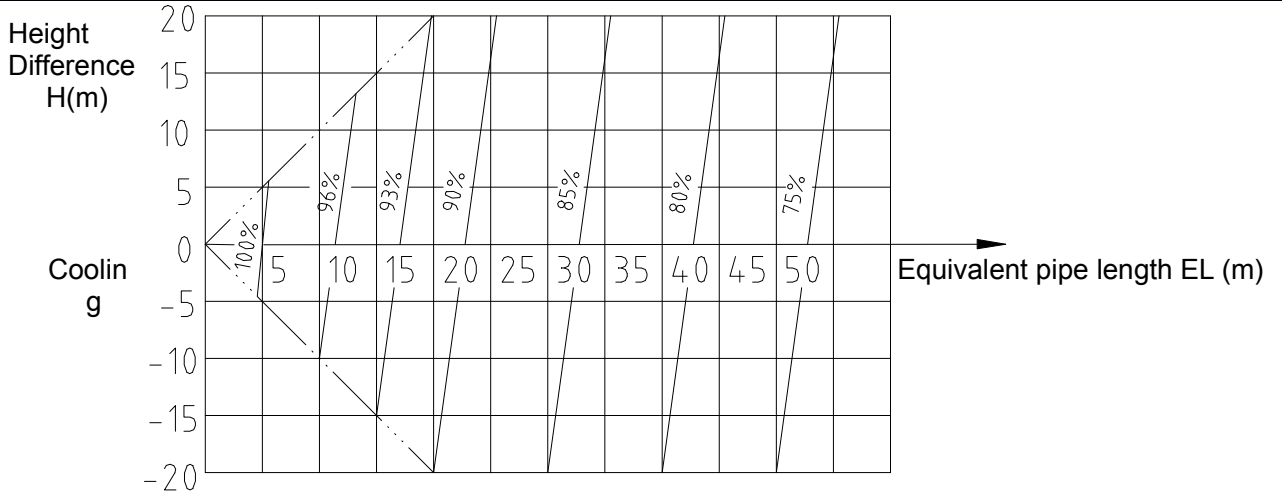
Actual heating capacity=amendment coefficient of heating capacity × nominal heating capacity

——nominal heating capacity could be found from the performance parameters list

——amendment coefficient of heating capacity could be found from table above.

3.4 Amendment coefficients of heating and cooling capacity under different height drop K3

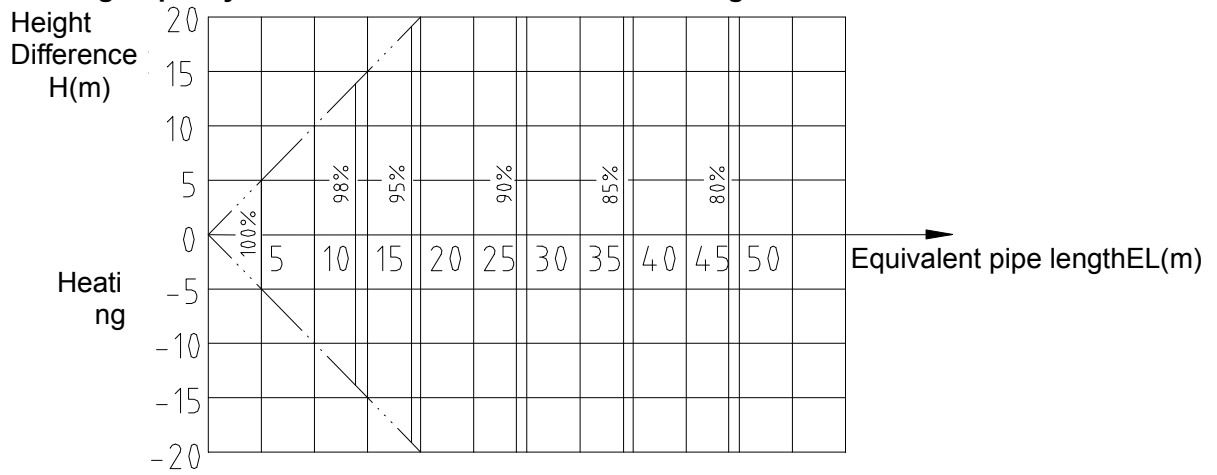
Different Cooling Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

Different Heating Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

3.5 Correction capability

Cooling capacity = nominal cooling capacity xK1xK3

Heating capacity = nominal heating capacity xK2xK3

3.6 Equivalent Pipe length conversion

Equivalent pipe length means converting pipe elbow to straight pipe length after considerate the pressure loss.

Bend and Oil Loop Conversion tablet

Pipe Dia.(mm)	Type	Bend	Oil Loop
6.35		0.10	0.7
9.52		0.18	1.3
12.70		0.20	1.5
15.88		0.25	2.0
19.05		0.35	2.4
22.02		0.40	3.0

Equivalent Pipe length L = Actual Pipe length L+ Bend Qty× Equivalent pipe bend length+ Oil Loop Qty × Equivalent Oil Loop length

Sample:

AMWM-H09/4R1(FA)Actual Pipe length is 25 meters, Gas pipe diameter is 9.52mm. If there's 5 bends and 2 oil loops during the installation, then the equivalent pipe length should be:

$$L=25+0.18\times 5+1.3\times 2=28.5(\text{m})$$

◇Specification of Connection Pipe for Indoor Unit and Outdoor Unit

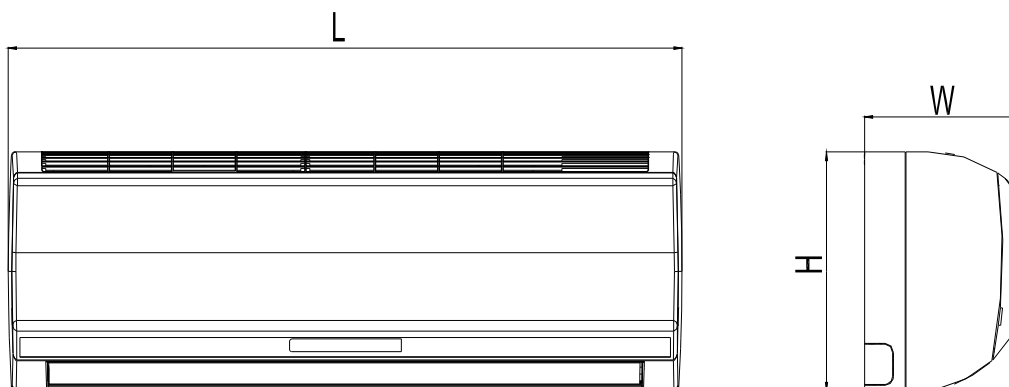
Cooling Capacity(Btu/h)		7000	9000	12000	18000
Connection Pipe (mm)	Liquid Pipe	Φ6.35			
	Gas Pipe	Φ9.52		Φ12.7	
oil loops Qty		2			
Max. Bend Qty		5			
Extra R410a per meter when the pipe length is more than 7.5 meter (kg)		0.022			

Caution:

1. The standard Pipe length is 7.5m, if the pipe length is less than this then no additional charging is necessary. If the pipe length is more than this then you should charge more refrigerant into the system according to the above Charging Data
2. The thickness of the pipe is 0.6-1.0, bearing pressure is 4.2MPa;
3. If the connection pipe is too long, the cooling capacity and stability would be decreased. And the more bend quantity, the resistance in the piping system would be bigger, then the cooling and heating capacity would be decreased even lead to compressor broken. We suggest you to use the shortest connection pipe according to the pipe length parameter in this manual.If the height difference between outdoor and indoor unit is more than 5m, an oil trap should be installed in the gas pipe for every 10 meters.

4. Dimension

AMWM-H07/4R1(L), AMWM-H09/4R1(L), AMWM-H12/4R1(L),AMWM-H18/4R1(L)



Physical Dimension		AMWM-H07/4R1(L)	AMWM-H09/4R1(L)	AMWM-H12/4R1(L)	AMWM-H18/4R1(L)
Length	mm	800	800	800	970
Height	mm	300	300	300	315
Width	mm	198	198	198	235

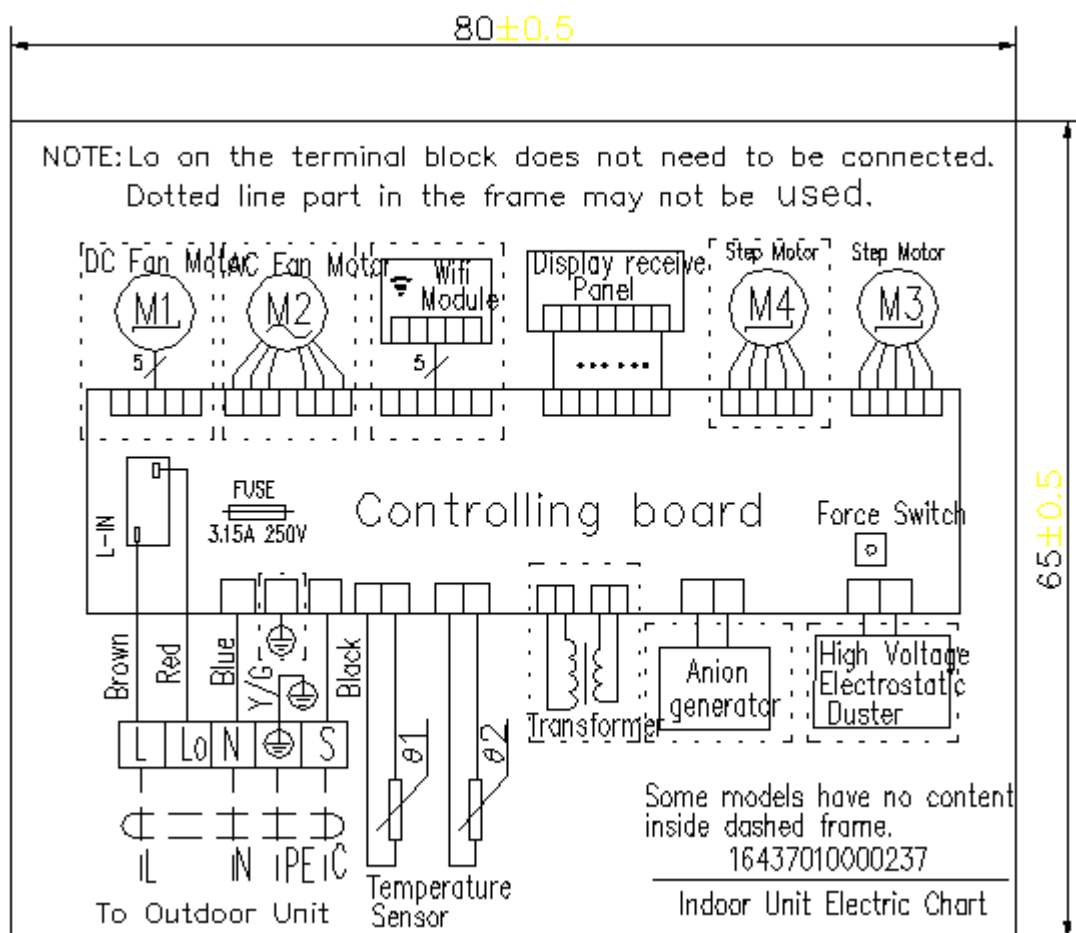
AMWM-H07/4R1(F), AMWM-H09/4R1(F), AMWM-H12/4R1(F),AMWM-H18/4R1(F)



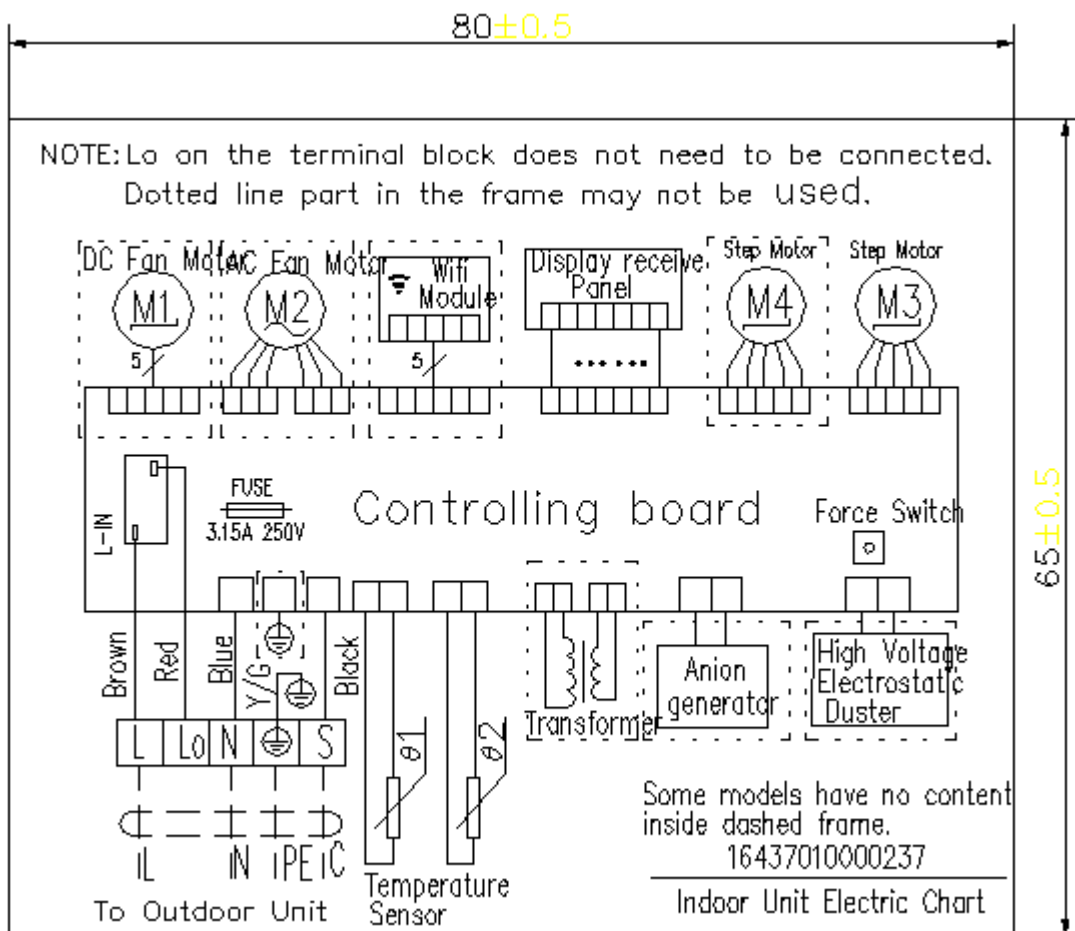
Physical Dimension		AMWM-H07/4R1(F)	AMWM-H09/4R1(F)	AMWM-H12/4R1(F)	AMWM-H18/4R1(F)
Length	mm	750	750	750	900
Height	mm	285	285	285	310
Width	mm	200	200	200	225

5. Electrical Diagram

AMWM-H07/4R1(L), AMWM-H09/4R1(L), AMWM-H12/4R1(L),AMWM-H18/4R1(L)

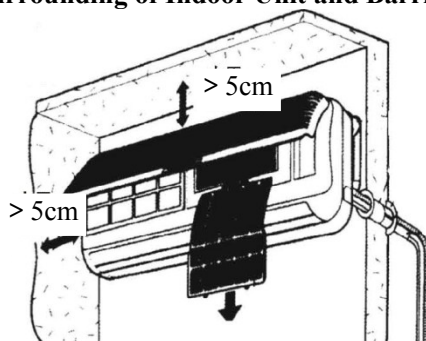


AMWM-H07/4R1(F), AMWM-H09/4R1(F), AMWM-H12/4R1(F),AMWM-H18/4R1(F)

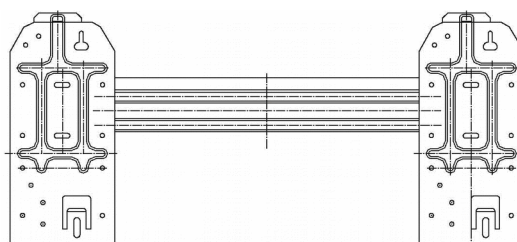


6. Installation

6.1 Spacing Reserved Between the Surrounding of Indoor Unit and Barrier



6.2 Hoisting of Indoor Unit

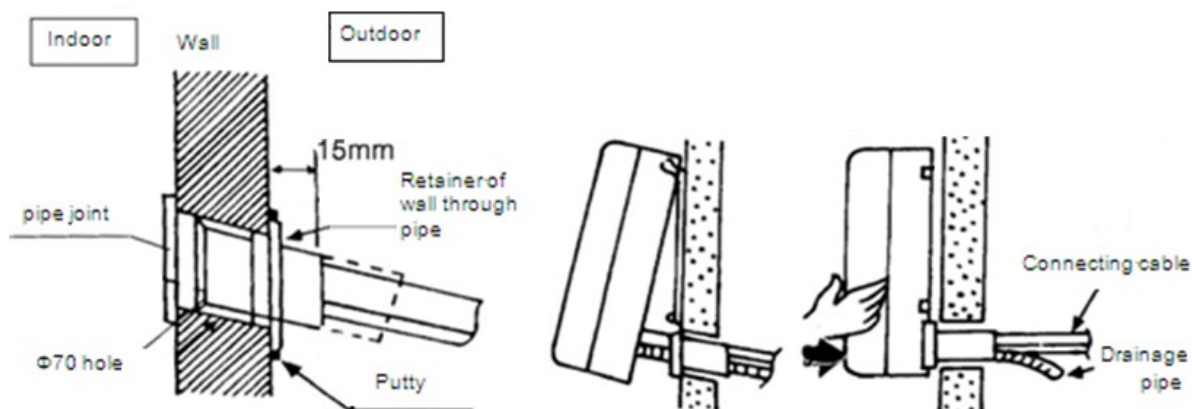


- ◇ The wall for installing indoor unit should be firm to prevent vibration. Horizontally install hanging plate on the wall with four cruciform screws to keep laterally horizontal and longitudinally vertical.

- ◇ Drill a $\Phi 70$ Auxiliary pipeline hole on lower left side or lower right side of hanging plate. The position of hole should slightly incline downwards.
- ◇ Hang indoor unit on hanging plate and move the unit to left or right to ensure hanging hook is correctly positioned on the hanging plate.

6.3 Installation of Sterilization Net

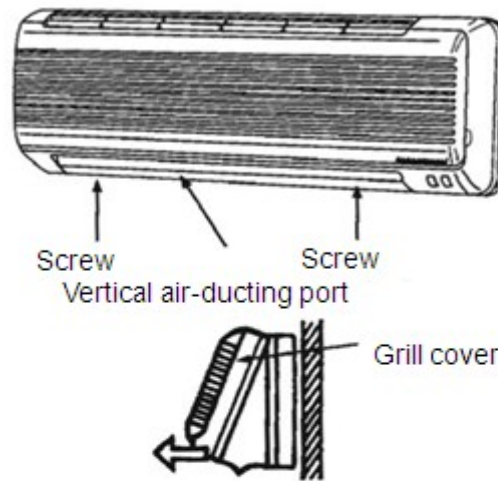
- ◇ Uplift panel of indoor unit, pull out the bulge in the middle of air filter downwards after uplifting;
- ◇ Completely snap sterilization net inside accessory bag into sterilization mounting support on air filter;
- ◇ Put back air filter in the original way, close the panel of indoor unit and tightly clamp;
- ◇ Push the lower left side and lower right side of indoor unit towards hanging plate until hanging hook inserts into groove and sends click sound.



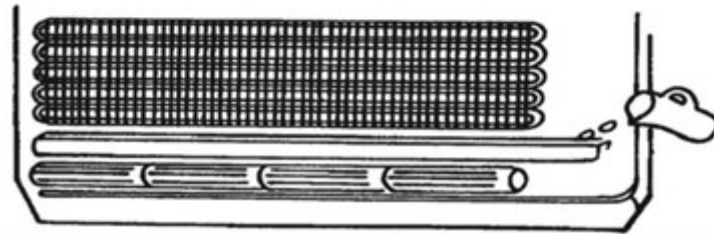
6.4 Drainage Checking

In case of maintenance, remove grille from casing of the unit according to the following procedures:

- ◇ As shown in right diagram, remove two screw caps on both sides of the front grille and then screw down two fixing screws.
- ◇ Pull the lower end of grille cover towards oneself to remove it.
- ◇ Reinstall grille cover, then install the grille cover to proper position according to the reverse sequence of the above.
- ◇ Pour a glass of water into plastic drainage groove;
- ◇ Confirm if the water flows through the drainage outlet of indoor unit.

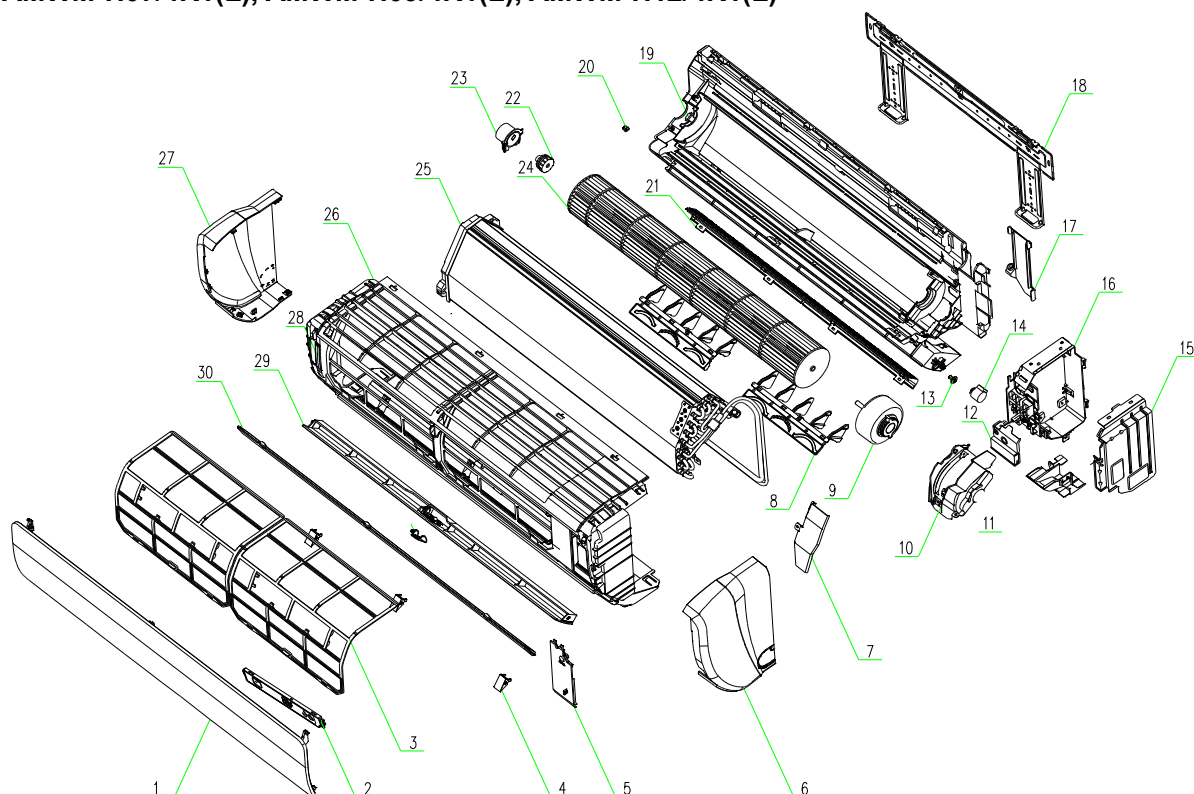


Pull the lower end of front grille towards oneself to remove the front grille



7. Explode view

AMWM-H07/4R1(L), AMWM-H09/4R1(L), AMWM-H12/4R1(L)



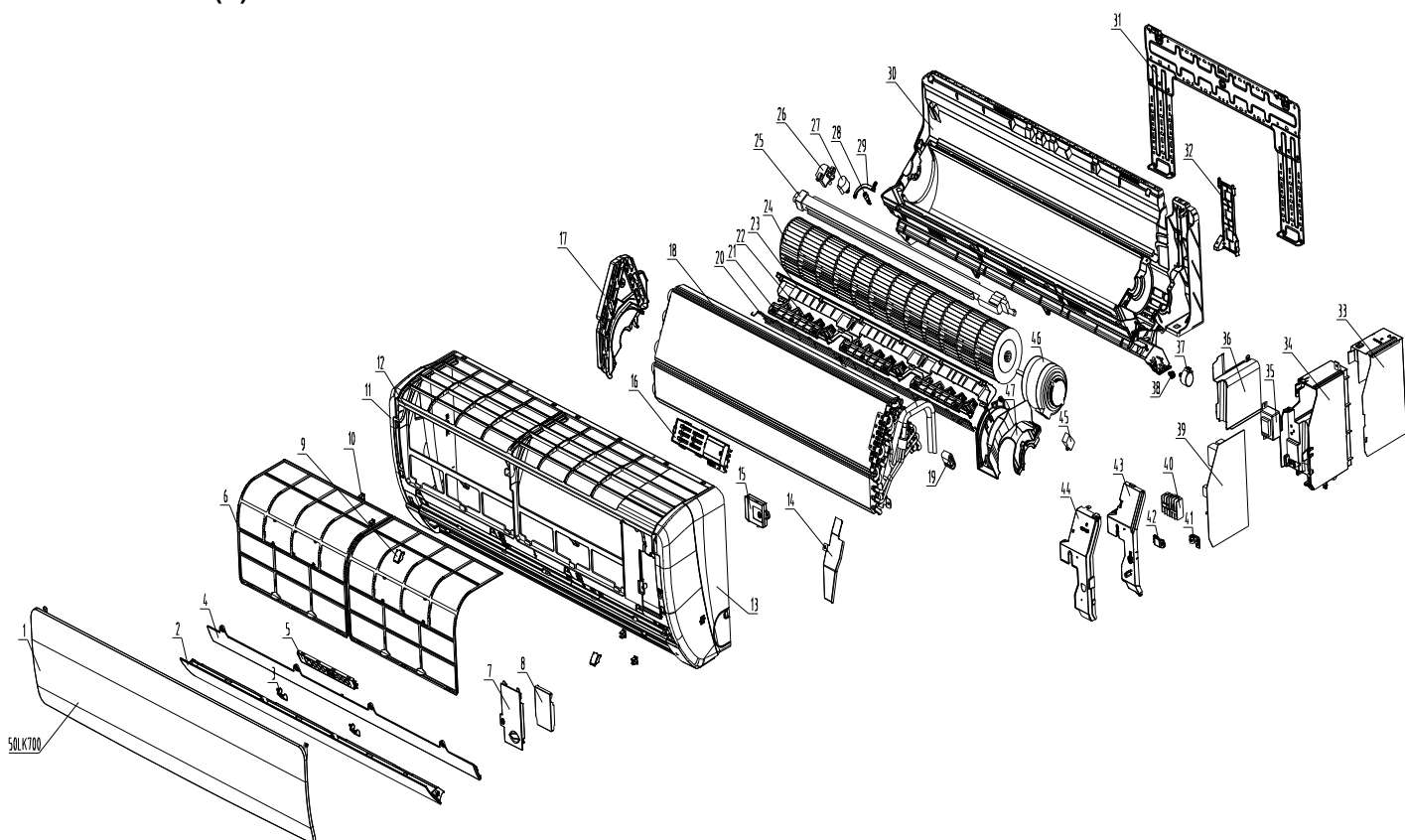
NO.	Material code	Part name	Qty	remarks
1	/	Panel	1	
2	/	Display board assembly	1	
3	/	Filter	2	
4	/	Screw cover	3	
5	/	Medium frame wiring cover	1	
6	/	Right-side cover	1	
7	/	Breakwater	1	
8	/	Air blade	2	
9	/	Indoor motor	1	
10	/	Motor cover	1	
11	/	Chassis supporting board	1	
12	/	Cover of electric controller box	1	
13	/	Step motor shaft sleeve	1	
14	/	Step motor	1	
15	/	Controller box sheet-metal A	1	
16	/	Main PCB	1	
17	/	Pipe clamp	1	
18	/	Mounting plate assembly	1	
19	/	Chassis	1	
20	/	Protecting bush	1	
21	/	Volute	1	
22	/	Cross flow fan rubber bearing	1	

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23	/	Pubber bearing fixing peg	1	
24	/	Cross flow fan assembly	1	
25	/	Evaporator assembly	1	
26	/	Medium frame	1	
27	/	Left-side cover	1	
28	/	Supporting plate	1	
29	/	Air louver	1	
30	/	Decoration board	1	BDR model doesn't have this part
/	/	Remote controller	1	

AMWM-H18/4R1(L)



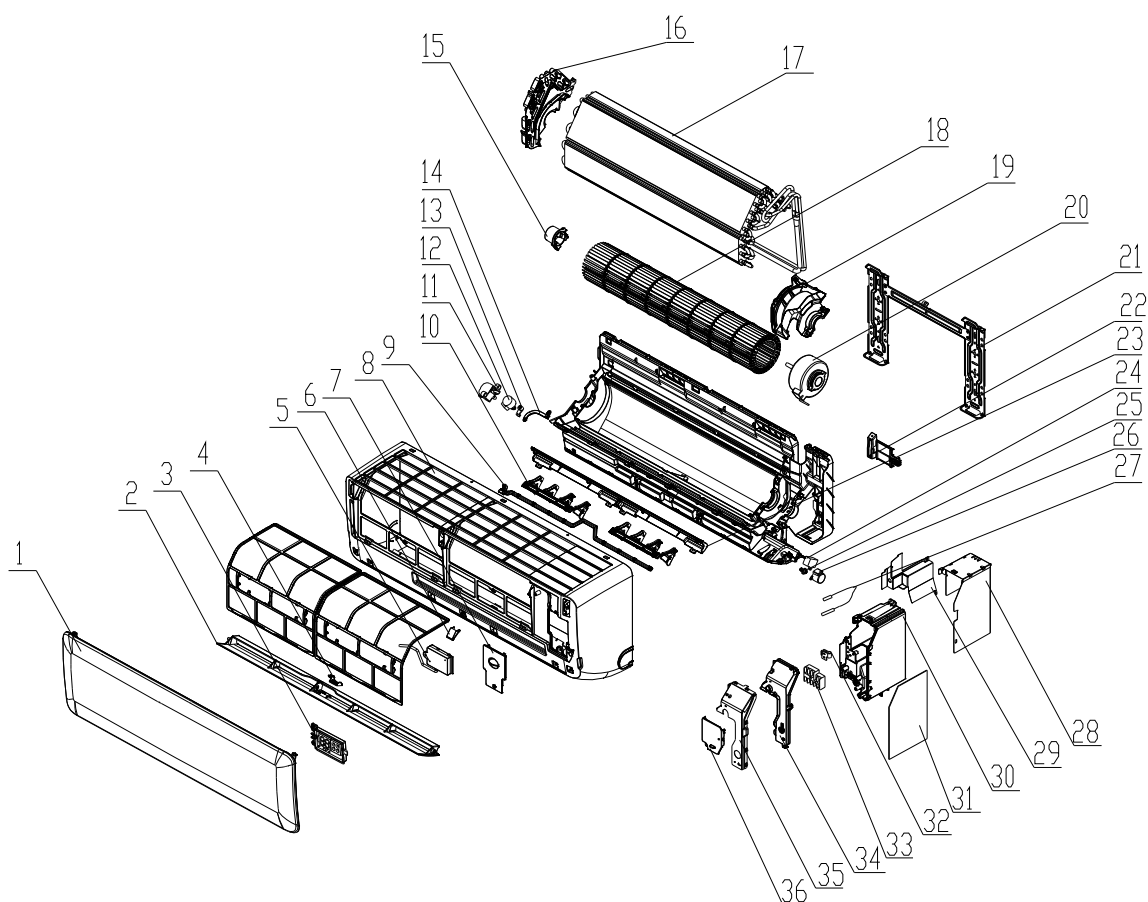
NO.	Material code	Part Name	Qty	remarks
1	/	Panel	1	
2	/	Air louver	1	
3	/	Air louver fixing peg	2	
4	/	Decoration board	1	BDR doesn't have this part
5	/	Display board assembly	1	
6	/	Filter	2	
7	/	Medium frame wiring cover	1	
8	/	Medium frame wiring cover scaleboard	1	
9	/	Screw cover	2	
10	/	Panel clamp	4	
11	/	Left-side cover	1	
12	/	Medium frame	1	
13	/	Right-side cover	1	
14	/	Break water	1	
16	/	Remote control	1	

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17	/	Evaporator left side support board	1	
18	/	Evaporator assembly	1	
21	/	Air blade	3	
23	/	Volute	1	
24	/	Cross flow fan assembly	1	
26	/	Motor chassis	1	optional
27	/	Step motor	1	optional
30	/	Chassis	1	
31	/	Mounting plate assembly	1	
32	/	Pipe clamp	1	
33	/	Controller box metal plate	1	
34	/	Electric controller box	1	
35	/	Transformer	1	
36	/	Controller box sheet-metal B	1	
37	/	Step motor	1	
38	/	Step motor shaft sleeve	1	
39	/	Main PCB	1	
40	/	Terminal board	1	
41	/	Clamp	1	
42	/	Cable clamp	1	
46	/	Indoor motor	1	
47	/	Motor cover	1	

AMWM-H07/4R1(F), AMWM-H09/4R1(F), AMWM-H12/4R1(F)



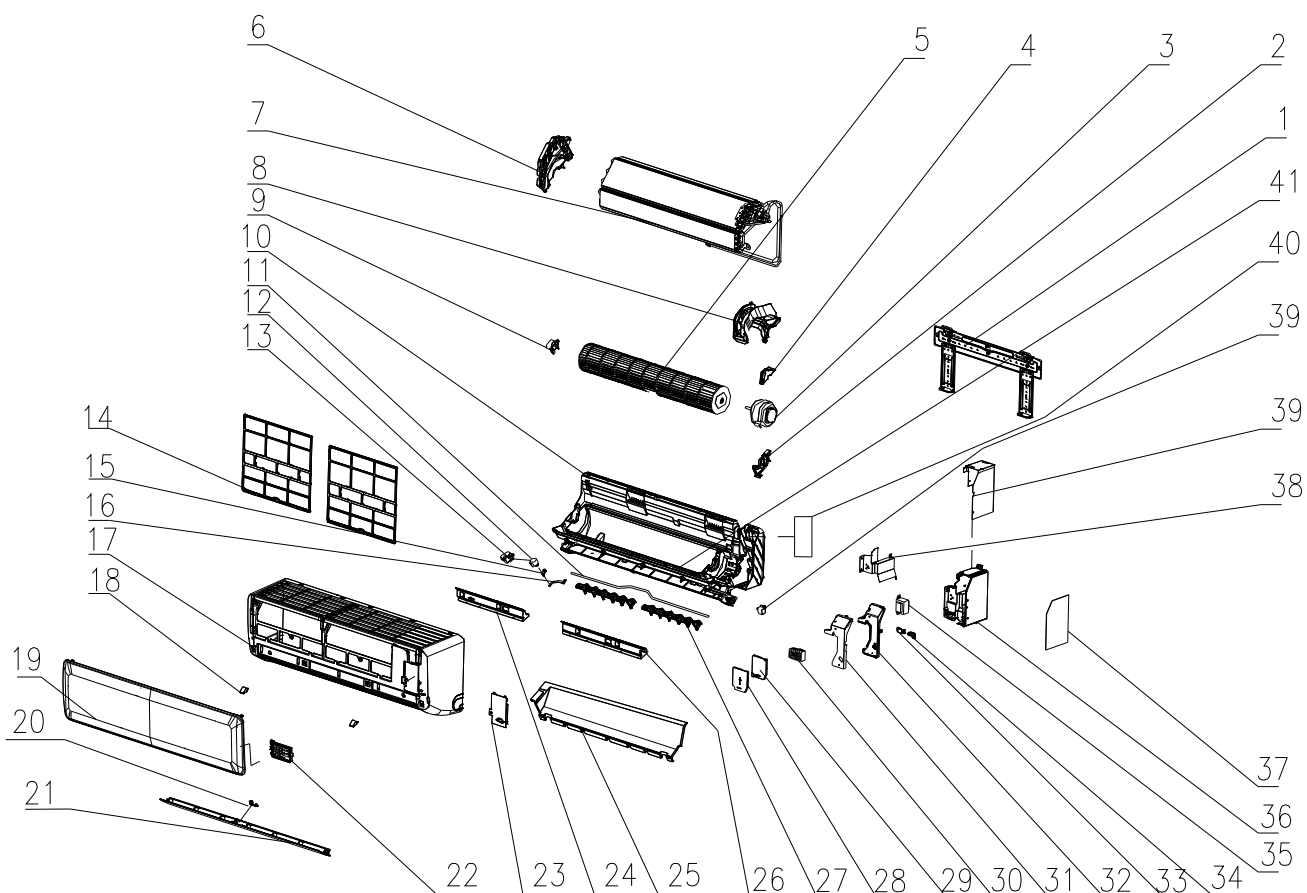
NO.	Material code	Part name	Qty	remarks
1	/	Decro panel	1	
2	/	Air louver (Horizontal)	1	
3	/	Display board	1	
4	/	Filter	2	
5	/	WiFi module	1	optional
6	/	Screw cover	1	
7	/	Medium frame wiring cover	1	
8	/	Medium frame	1	
9	/	Guide vane linkage	1	optional
10	/	Left-right swing blade	2	
11	/	Step motor bracket	1	
12	/	Step motor vertical louver	1	optional
13	/	Crank link	1	
14	/	Guide vane linkage B	1	
15	/	Bearing fixing bracket	1	
16	/	Evap left side bracket	1	
17	/	Evaporator assembly	1	
18	/	Scroll fan	1	
19	/	Fan motor cover	1	
20	/	IDU fan motor	1	
21	/	Mounting plate assembly	1	
22	/	Pipe clamp	1	

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Free Match outdoor unit

23	/	Horizontal louver	1	
24	/	Ionizer creator	1	
25	/	Step motor shaft sleeve	1	
26	/	Step motor horizontal	1	
	/	Main control assembly	1	
27	/	Air-coil temperature sensor	1	3950-15K/20K-400/460mm
28	/	Shield electric box A	1	
29	/	Shield electric box B	1	
30	/	Control box	1	
31	/	Main control board	1	
32	/	Wire clip	1	
33	/	Terminal block	1	
34	/	Control box cover	1	
35	/	Electric sheet metal cover	1	
36	/	Shield electric cover	1	

AMWM-H18/4R1(F)



NO.	Material code	Part name	Qty	remarks
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1	/	Mounting plate assembly	1	
2	/	Pipe clamp	1	
3	/	IDU fan motor	1	
4	/	Shaft sleeve	1	
5	/	Scroll fan	1	
6	/	Evap left side bracket	1	
7	/	Evap asm	1	
8	/	Fan motor cover	1	
9	/	Scroll fan	1	
10	/	Chassis assembly	1	
11	/	Guide vane linkage	1	optional
12	/	Step motor vertical louver	1	optional
13	/	Step motor bracket	1	optional
14	/	Filter	2	
15	/	Crank link	1	
16	/	Guide vane linkage B	1	
17	/	Medium frame	1	
18	/	Screw cover	1	
19	/	Decro panel	1	
20	/	Air guiding door fixing pin	1	
21	/	Air louver (Horizontal)	1	
22	/	Display board	1	
23	/	Medium frame wiring cover	1	
24	/	Base EPS B	1	
25	/	Base EPS A	1	
26	/	Base EPS D	1	
27	/	Left-right swing blade	2	
	/	Main control assembly	1	
28	/	Shield electric box	1	optional
29	/	Electric plastic cover	1	
30	/	Terminal block	1	
31	/	Electric sheet metal cover	1	
32	/	Control box cover	1	
33	/	Electric sheet metal cover	1	
34	/	Wire holder	1	
35	/	Transformer	1	optional
36	/	Electric box	1	
37	/	Main control board	1	
38	/	Shield electric box B	1	optional
39	/	Shield electric box A	1	optional
40	/	Step motor horizontal louver	1	
41	/	Rubber seal	1	
42	/	Scroll tongue	1	

Part 3 Free Match outdoor unit

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1. Function Introduction

- ◇AUX DC Inverter Air Conditioner adopts the advanced 180 sine wave DC Inverter driving technology.
- ◇AUX DC Inverter Air Conditioner adopts PD frequency control technology to well control the room temperature.
- ◇Adjusting with EXV, the whole unit could achieve quick cooling/heating and the minimum temperature fluctuation of indoor unit.
- ◇Defrost Control: AUX DC Inverter Air Conditioner adopts intelligent defrosting technology that detect the frosting thickness, promotes the comfort when heating.
- ◇Auto-restart;
- ◇The universal series using L-N communication control between indoor and outdoor units, more reliable and easy to install, no need to special training for installation workers.
- ◇With multiple protection, the compressor could well run in reasonable operation range.
- ◇After adding the self-diagnose function and digital tube display function, the outdoor unit could be easily identify the reason of the fault.

2. Specification

DC INVERTER	Model		AM2-H14/4DR1	AM2-H18/4DR1B	AM3-H21/4DR1	AM3-H27/4DR1B
System Format			1 drive 2	1 drive 2	1 drive 3	1 drive 3
Capacity	Cooling	Btu/h	13989(6142-15388)	18084(6824-19892)	20813(7506~22895)	26955(7848~29650)
		kW	4.1(1.8-4.51)	5.3(2.0-5.83)	6.1(2.2~6.71)	7.9(2.3~8.69)
	Heating	Btu/h	16378(6995-18015)	19107(7541-21017)	22519(8155~24771)	27978(8359~30776)
		kW	4.8(2.05-5.28)	5.6(2.21-6.16)	6.6(2.39~7.26)	8.2(2.45~9.02)
Electric Data	Power Supply	V~,Hz,P h	220~240,50,1	220~240,50,1	220~240,50,1	220~240,50,1
	Cooling Power Input	W	1240(198-2100)	1750(280-2300)	1920 (350-2800)	2460 (560-3400)
	Heating Power Input	W	1150(198-2100)	1540(280-2300)	1780 (350-2800)	2270 (560-3400)
	Rated Current (cooling&heating)	A	5.4/5.0	7.6/6.7	8.3/7.8	10.7/9.8
	Max current	A	10	11	13	16
	Max power	KW	2.1	2.3	2.8	3.4
Performance	SEER/SCOP	W/W	6.16/4.14	6.20/4.14	6.16/4.09	6.23/4.04
	Energy Rate		A++/A+	A++/A+	A++/A+	A++/A+
	EER/COP	W/W	3.31/4.17	3.03/3.64	3.18/3.71	3.21/3.61
DC Inv.Compressor	Model		ASN108D22UFZ	ASM135D23UFZ	ATM150D23UFZA 2	ATM240D57UKP
	Quantity		1	1	1	1
	Type		Rotary	Rotary	Twin Rotary	Twin Rotary
	Brand		GMCC	GMCC	GMCC	GMCC
	Capacity	W	3260	4050	4470	7050
	Input	W	840	1025	1145	1920
	Power Supply	V~,Hz,P h	220~240,50,1	220~240,50,1	220~240,50,1	220~240,50,1
	Rated Current	A	5.88	7.25	7.95	8.7
	Operating Frequency	Hz	60	60	60	60
	Frequency Range		10~120 S ⁻¹	10~120 S ⁻¹	9~120 S ⁻¹	12~120 S ⁻¹
Refrigerant Oil	ml	340(VG74)	450(VG74)	500(VG74)	670(VG74)	
Outdoor DC Inverter Fan Motor	Model		RDN-310-40-8	RDN-310-40-8	D-65-8	D-65-8
	Type		DC Inverter	DC Inverter	DC Inverter	DC Inverter
	Brand		WELLING	WELLING	WOLONG	WOLONG
	Quantities		1	1	1	1
	Insulation Class		B	B	B	B
	Safe Class		IPX4	IPX4	IPX4	IPX4
	Input Power	W	60	60	85	85
	Output Power	W	40	40	65	65
	Capacitor	uF	/	/	/	/
Speed	r/min	850-350	850-350	870-350	870-350	
Outdoor Fan	Material		Plastic	Plastic	Plastic	Plastic
	Diameter	mm	Φ421×117	Φ421×117	Φ470×140	Φ470×140
	Fan Quantity		1	1	1	1
Outdoor Coil	a.Number Of Row		2	2	2	2

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Free Match outdoor unit

	b.Tube Pitch(a)x Row Pitch(b)	mm	22×19.05	22×19.05	22×19.05	22×19.05
	c.Fin Pitch	mm	1.3	1.3	1.3	1.3
	d.Fin Material		Hydrophilic aluminum fin	Hydrophilic aluminum fin	Hydrophilic aluminum fin	Hydrophilic aluminum fin
	e.Tube Outside Dia.And Material	mm	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved	φ7 , Inner grooved
	f.Coil Length x Height x Width	mm	757×506×38.1	757×506×38.1	757×616×38.1	757×616×38.1
Air Flow Volume		CFM	1235	1235	1588	1588
		m³/h	2100	2100	2700	2700
Noise Level	Sound Pressure Noise Level	dB(A)	54	55	56	58
	Sound Power Noise Level	dB(A)	61	62	65	65
Dimension	Net Dimension (W*D*H)	mm	800×315×545	800×315×545	822×302×655	822×302×655
	Packing Dimension (W*D*H)	mm	920×400×620	920×400×620	945×430×725	945×430×725
Weight	Net	kg	34	36	44	46
	Gross	kg	37	39	47	49
Refrigerant type/Quantity	Type		R410a	R410a	R410a	R410a
	Charged Volume	kg	1.3	1.35	1.5	1.4
Piping	Liquid Side	mm(inch)	2×6.35(1/4)	2×6.35(1/4)	3×6.35(1/4)	3×6.35(1/4)
	Gas Side	mm(inch)	2×9.52(3/8)	2×9.52(3/8)	3×9.52(3/8)	3×9.52(3/8)
	Max. length for all rooms (m)	m	40	40	60	60
	Max. length for one IU (m)	m	25	25	30	30
	Max. height difference between IU and OU (m)	m	15	15	15	15
	Max. height difference between IUs (m)	m	10	10	10	10
Ambient Temp (Cooling/Heating)		°C	-10~52°C/-15~24°C	-10~52°C/-15~24°C	-10~52°C/-15~24°C	-10~52°C/-15~24°C
Stuffing Quantity	20/40/40H	unit	102/219/292	102/219/292	102/210/210	102/210/210

DC	Model	AM4-H36/4DR1	AM5-H42/4DR1
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Free Match outdoor unit

INVERTER					
System Format			1 drive 4	1 drive 5	
Capacity	Cooling	Btu/h	35826(8560~37600)	40944(9450~43150)	
		kW	10.5(2.5~11.0)	12(2.77~12.7)	
	Heating	Btu/h	37532(9100~38120)	44356(10100~44800)	
		kW	11(2.67~11.2)	13(2.96~12.8)	
Electric Data	Power Supply	V~,Hz,Ph	220~240,50,1	220~240,50,1	
	Cooling Power Input	W	3200(780-4150)	3600(800-4200)	
	Heating Power Input	W	3250(700-3750)	3650(730-3800)	
	Rated Current (cooling&heating)	A	14.5/15.0	16/16.5	
Performance	SEER/SCOP	W/W	6.14/4.19	6.13/4.26	
	Energy Rate		A++/A+	A++/A+	
DC Inv.Compressor	Model		QXAS-D32zX090B	QXAS-D32zX090B	
	Quantity		1	1	
	Type		Birotory DC Inverter	Birotory DC Inverter	
	Brand		LANDA	LANDA	
	Capacity	W	10060	10060	
	Input	W	3360	3360	
	Power Supply	V~,Hz,Ph	220~240,50,1	220~240,50,1	
	Rated Current	A	6.7	6.7	
	Operating Frequency	Hz	60	60	
	Frequency Range		12~120 S ⁻¹	12~120 S ⁻¹	
	Refrigerant Oil	ml	950(VG74)	950(VG74)	
	Outdoor DC Inverter Fan Motor	Model		CW85C CW85D	CW85C CW85D
		Type		AC	AC
Brand			Xinjun	Xinjun	
Quantities			2	2	
Insulation Class			B	B	
Safe Class			IPX4	IPX4	
Input Power		W	142×2	141×2	
Output Power		W	85×2	85×2	
Capacitor		uF	2×4uF	2×4uF	
Speed		r/min	860/710/570	860/710/570	
Outdoor Fan	Material		Plastic	Plastic	
	Diameter	mm	φ528×165	φ528×165	
	Fan Quantity		2	2	
Outdoor Coil	a.Number Of Row		1.5	1.5	
	b.Tube Pitch(a)x Row Pitch(b)	mm	22×19.05	22×19.05	
	c.Fin Pitch	mm	1.6	1.6	
	d.Fin Material		Hydrophilic aluminum fin	Hydrophilic aluminum fin	
	e.Tube Outside Dia.And Material	mm	φ7.94 , Inner grooved	φ7.94 , Inner grooved	

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Free Match outdoor unit

	f.Coil Length x Height x Width	mm	954×1320×19.05+400×1320×19.05	954×1320×19.05+400×1320×19.05
	g.Heat Exchanging Area	m ²	27.42	27.42
Air Flow Volume		CFM	3765	3765
		m ³ /h	6400	6400
Noise Level	Sound Pressure Noise Level	dB(A)	57	57
	Sound Power Noise Level	dB(A)	65	65
Dimension	Net Dimension (W*D*H)	mm	940×368×1366	940×368×1366
	Packing Dimension (W*D*H)	mm	1080×460×1500	1080×460×1500
Weight	Net	kg	96	97
	Gross	kg	109	110
Refrigerant type/Quantity	Type		R410a	R410a
	Charged Volume	kg	3.4	3.4
Piping	Liquid Side	mm(inch)	4×6.35(1/4)	5×6.35(1/4)
	Gas Side	mm(inch)	4×9.52(3/8)	5×9.52(3/8)
	Max length for all rooms (m)	m	80	80
	Max length for one IU	m	35	35
	Max height difference between IU and OU	m	15	15
	Max. height difference between IUs	m	10	10
Ambient Temp (Cooling/Heating)		°C	-10~52°C/-15~24°C	-10~52°C/-15~24°C
Stuffing Quantity	20/40/40H	unit	27/55/55	27/55/55

Note:

- Cooling capacity test Condition:(27°CDB,19°CWB Indoor/35°CDB,24°CWB Outdoor);
Heating capacity test Condition:(20°CDB Indoor/7°CDB,6°CWB Outdoor);
connecting pipe length: 7.5M.
- Data may be changed with unit improvement. We keep the right to change the data or specifications without prior notice, please follow the data listed on the nameplate.

3. Capacity Amendment

3.1 Running range

Cooling capacity (Btu/h)	14000	18000	21000	27000	36000	42000
Power supply	220-240V~/50Hz					
Voltage	187~253V					
Ambient temperature	Cooling	-10~52°C				
	Heating	-15~24°C				

3.2 Amendment coefficient of cooling capacity under different indoor/outdoor temperature K1

Indoor temperature(°C)		Outdoor temperature(DB)					
DB	WB	25	30	35	40	45	50
22	15	0.97	0.92	0.87	0.96	0.77	0.75
24	17	1.03	0.98	0.94	0.89	0.84	0.80
27	19	1.10	1.05	1	0.95	0.90	0.86
29	21	1.16	1.11	1.06	1.02	0.96	0.91
32	23	1.22	1.17	1.13	1.08	1.02	0.98

Actual cooling capacity calculation:

Actual cooling capacity=amendment coefficient of cooling capacity × nominal cooling capacity

——nominal cooling capacity could be found from the performance parameters list

——amendment coefficient of cooling capacity could be found from table above.

3.3 Amendment coefficient of heating capacity under different indoor/outdoor temperature K2

Outdoor temperature(°C)		Indoor room temperature(°C)		
DB	WB	15	20	25
-15	-16	0.64	0.59	0.55
-10	-12	0.71	0.66	0.62
-7	-8	0.76	0.72	0.67
-1	-2	0.79	0.74	0.70
2	1	0.81	0.76	0.72
7	6	1.04	1	0.96
10	9	1.10	1.06	1.01
15	12	1.16	1.12	1.07

Actual heating capacity calculation:

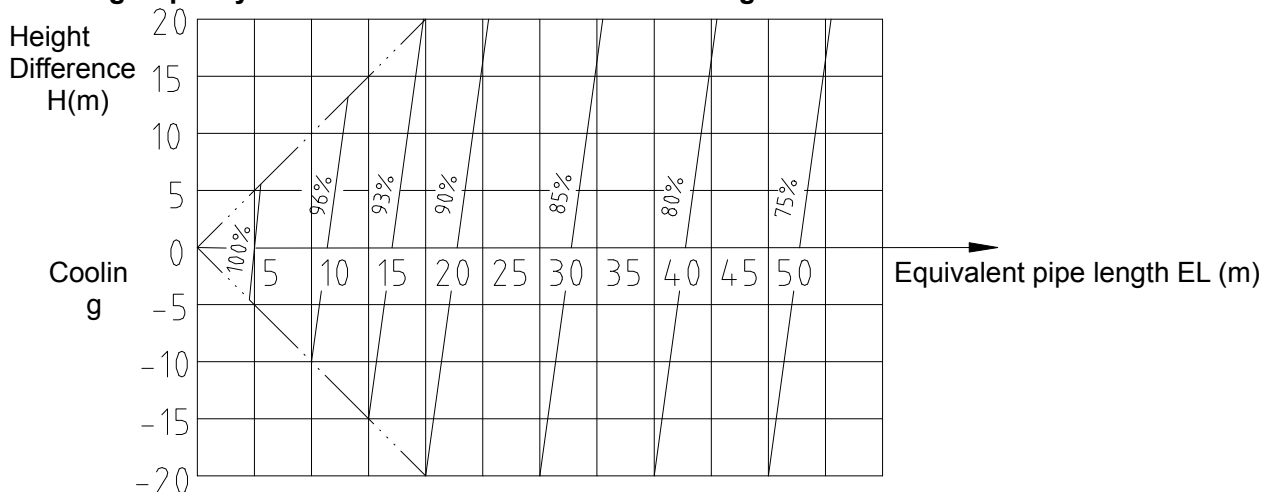
Actual heating capacity=amendment coefficient of heating capacity × nominal heating capacity

——nominal heating capacity could be found from the performance parameters list

——amendment coefficient of heating capacity could be found from table above.

3.4 Amendment coefficients of heating and cooling capacity under different height drop K3

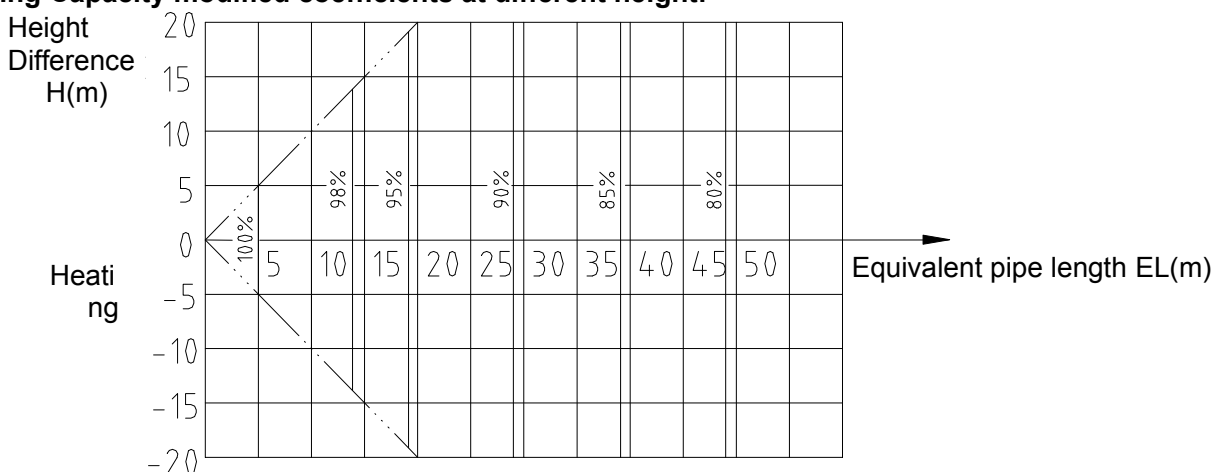
Different Cooling Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

Different Heating Capacity modified coefficients at different height:



Note:

H = Height of Outdoor Unit - Height of Indoor Unit

3.5 Correction capability

Cooling capacity = nominal cooling capacity xK1xK3

Heating capacity = nominal heating capacity xK2xK3

3.6 Equivalent Pipe length conversion

Equivalent pipe length means converting pipe elbow to straight pipe length after considerate the pressure loss.

Bend and Oil Loop Conversion tablet

Pipe Dia.(mm)	Type	Bend	Oil Loop
6.35		0.10	0.7
9.52		0.18	1.3
12.70		0.20	1.5
15.88		0.25	2.0
19.05		0.35	2.4
22.02		0.40	3.0

Equivalent Pipe length L = Actual Pipe length L+ Bend Qty× Equivalent pipe bend length+ Oil Loop Qty × Equivalent Oil Loop length

Sample:

AM2-H18/4DR1A Actual Pipe length is 25 meters, Gas pipe diameter is 9.52mm. If there's 5 bends and 2 oil loops during the installation, then the equivalent pipe length should be:

$$L=25+0.18\times 5+1.3\times 2=28.5(\text{m})$$

◇Specification of Connection Pipe for Indoor Unit and Outdoor Unit

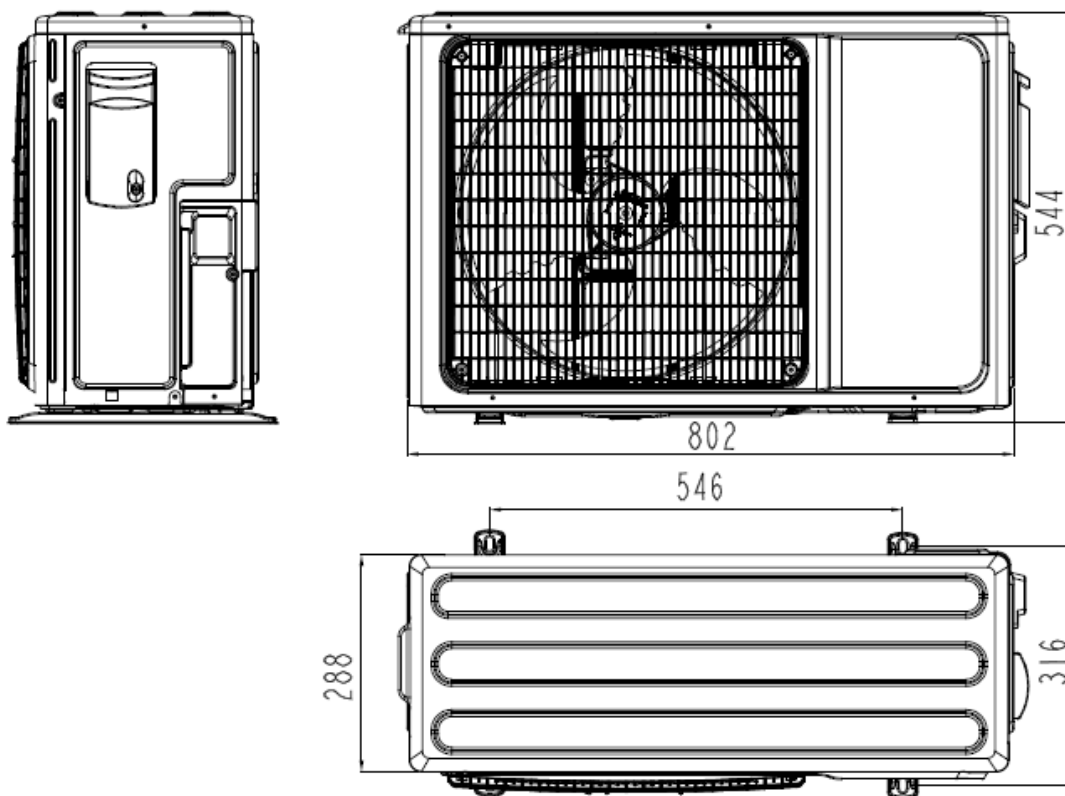
Cooling Capacity(Btu/h)		1 drive 2	1 drive 3	1 drive 4	1 drive 5
Connection Pipe (mm)	Liquid Pipe	Φ6.35			
	Gas Pipe	Φ9.52			
Max. oil loops		2			
Max. Bend Qty		5			
Extra R410a per meter when the pipe length is more than 7.5 meter (kg)		0.022			

Caution:

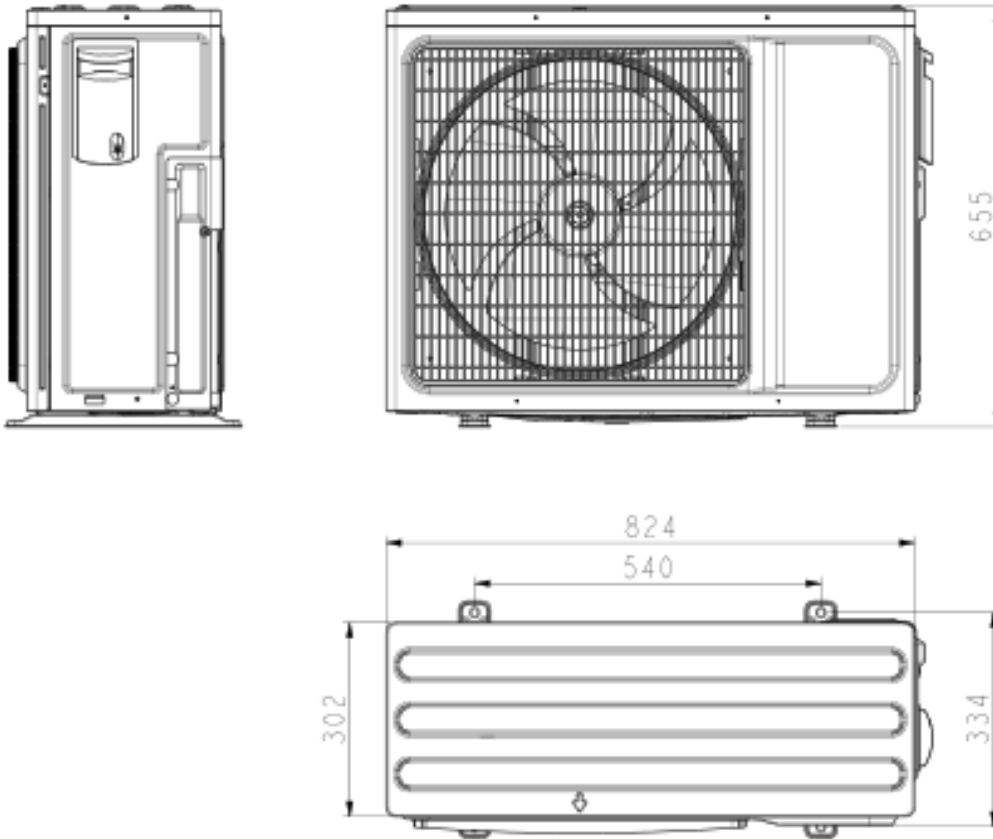
1. The standard Pipe length is 7.5m, if the pipe length is less than this then no additional charging is necessary. If the pipe length is more than this then you should charge more refrigerant into the system according to the above Charging Data
2. The thickness of the pipe is 0.6-1.0, bearing pressure is 4.2MPa;
3. If the connection pipe is too long, the cooling capacity and stability would be decreased. And the more bend quantity, the resistance in the piping system would be bigger, then the cooling and heating capacity would be decreased even lead to compressor broken. We suggest you to use the shortest connection pipe according to the pipe length parameter in this manual.If the height difference between outdoor and indoor unit is more than 5m, an oil trap should be installed in the gas pipe for every 10 meters.

4. Dimension

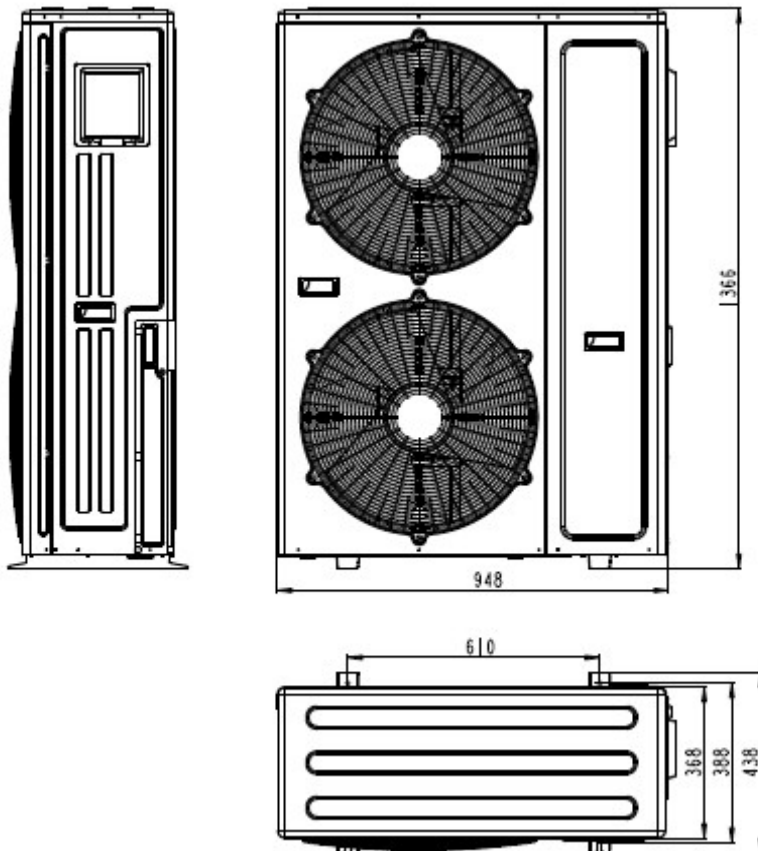
AM2-H14/4DR1、AM2-H18/4DR1B



AM3-H21/4DR1、AM3-H27/4DR1B



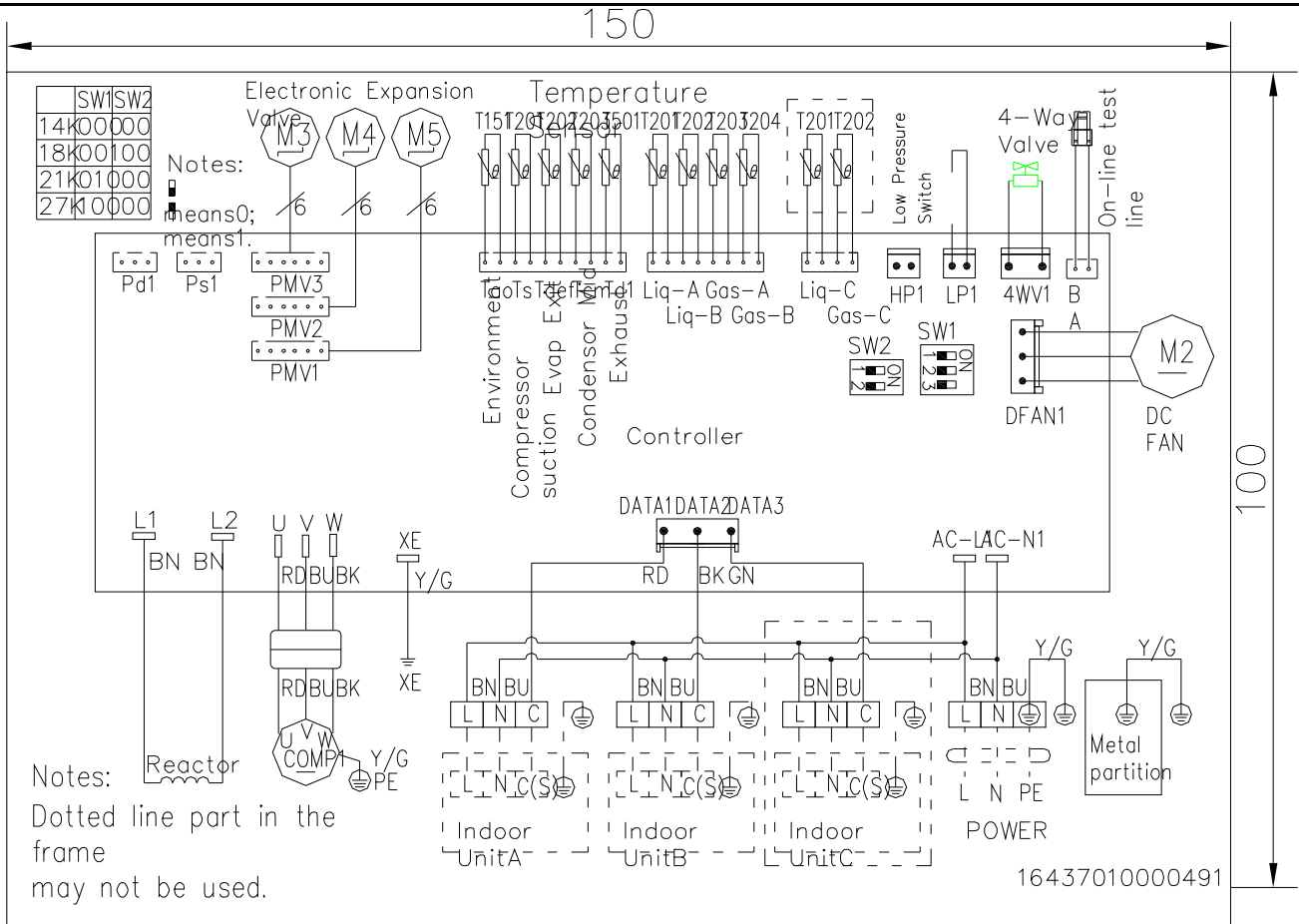
AM4-H36/4DR1, AM5-H42/4DR1



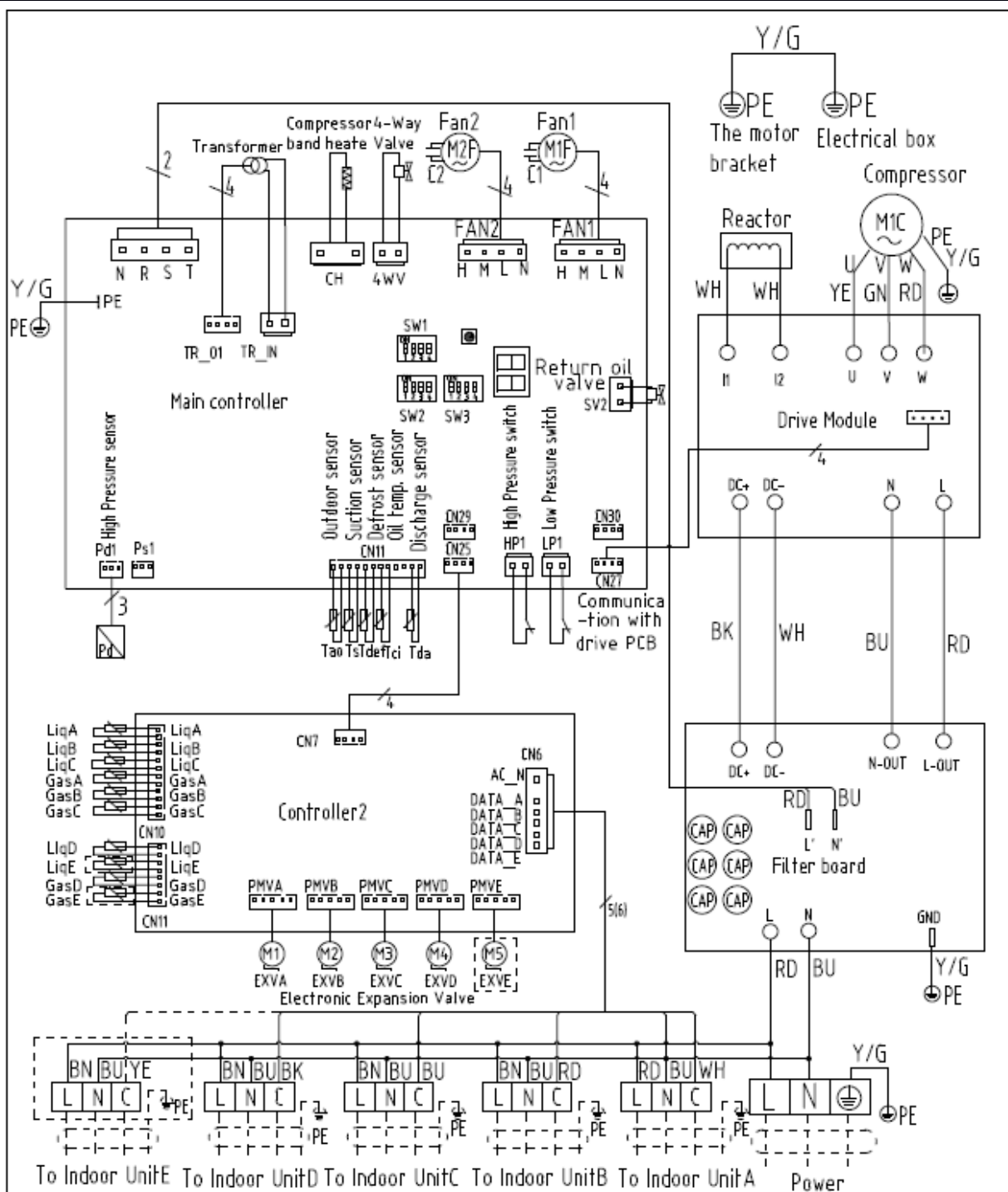
5. Electrical Diagram and connection

Electrical Diagram

AM2-H14/4DR1、AM2-H18/4DR1B、AM3-H21/4DR1、AM3-H27/4DR1B



AM4-H36/4DR1 AM5-H42/4DR1



SW1 function definition:
the unit capacity setting

	36K(T4)
	42K(T5)

SW2 function definition:
Special function Selection

	Reserved
	Reserved
	ON:The minority obeying the majority OFF:First match wins(default)
	ON :AC motor OFF:DC motor(default)

SW3 function definition:
Special function Selection

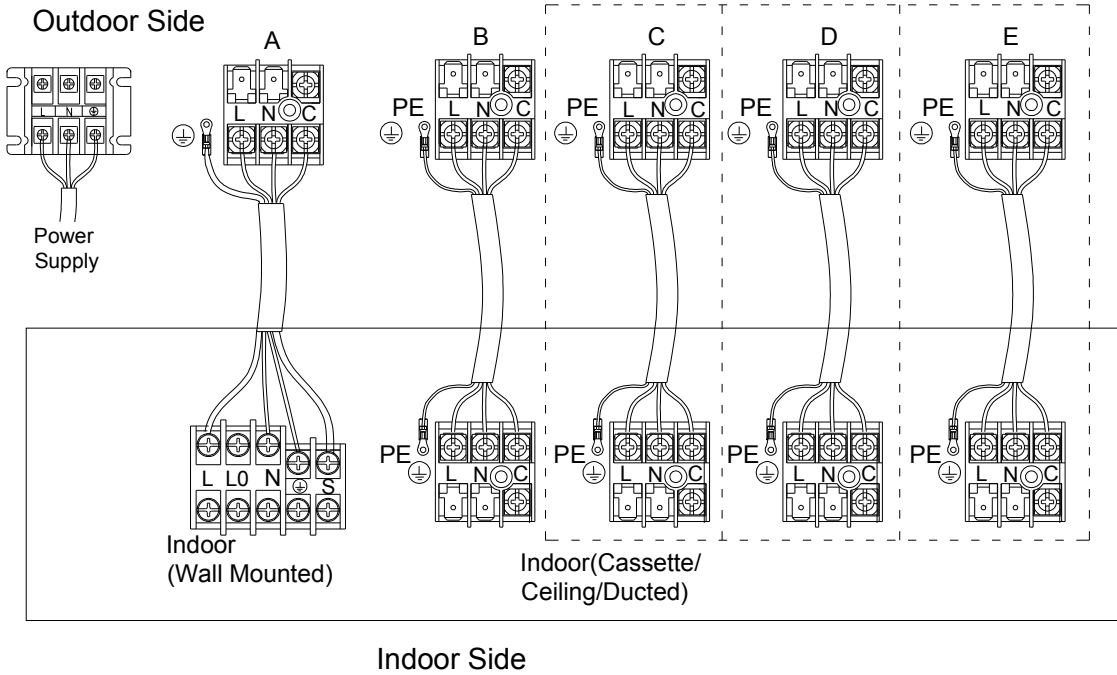
	Reserved
	ON:without electricity 6 hours heating OFF:electricity 6 hours heating (default)
	ON:Quiet mode OFF:No quiet mode(default)
	Reserved

Note: "■" refers to ON,
"□" refers to OFF.

Electrical Wiring Connection

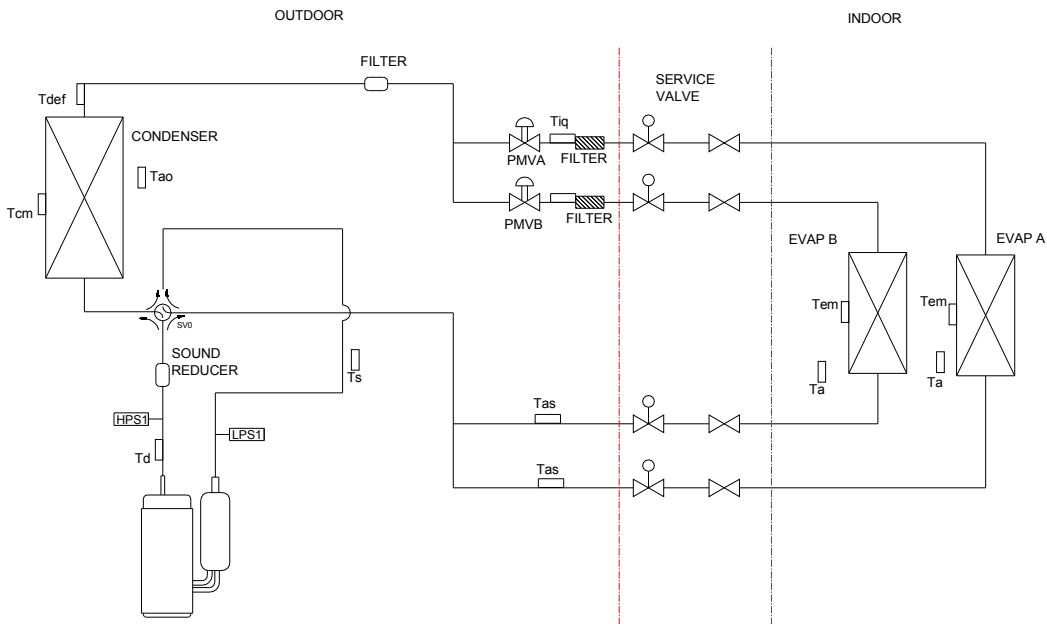
AM2-H14/4DR1、AM2-H18/4DR1B、AM3-H21/4DR1

AM3-H27/4DR1B、AM4-H36/4DR1、AM5-H42/4DR1

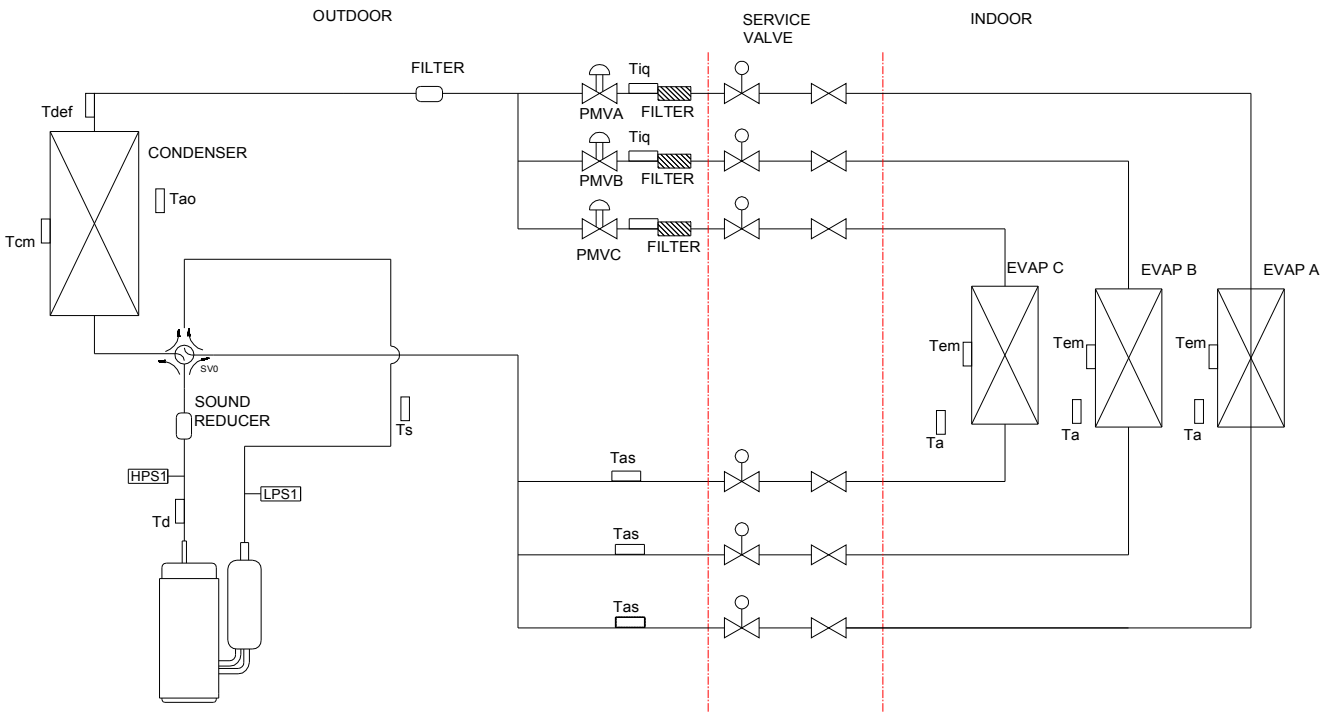


6. System Diagram

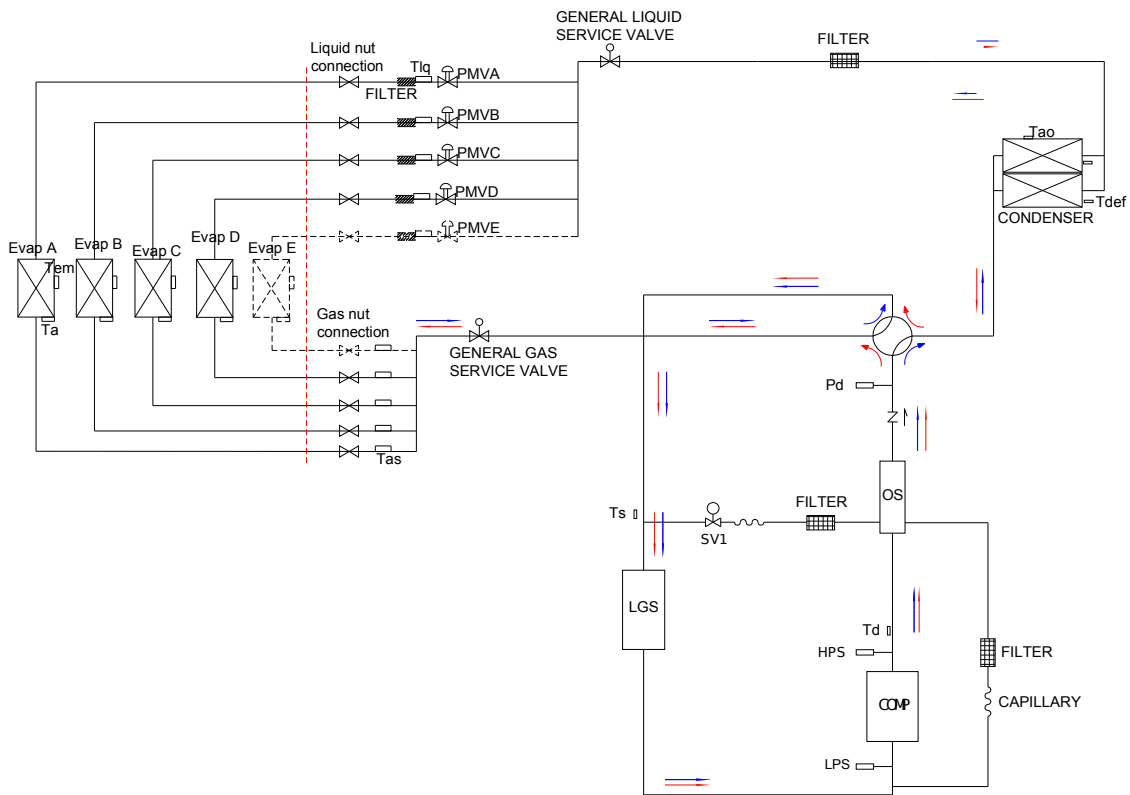
AM2-H14/4DR1、AM2-H18/4DR1B



AM3-H21/4DR1、AM3-H27/4DR1B

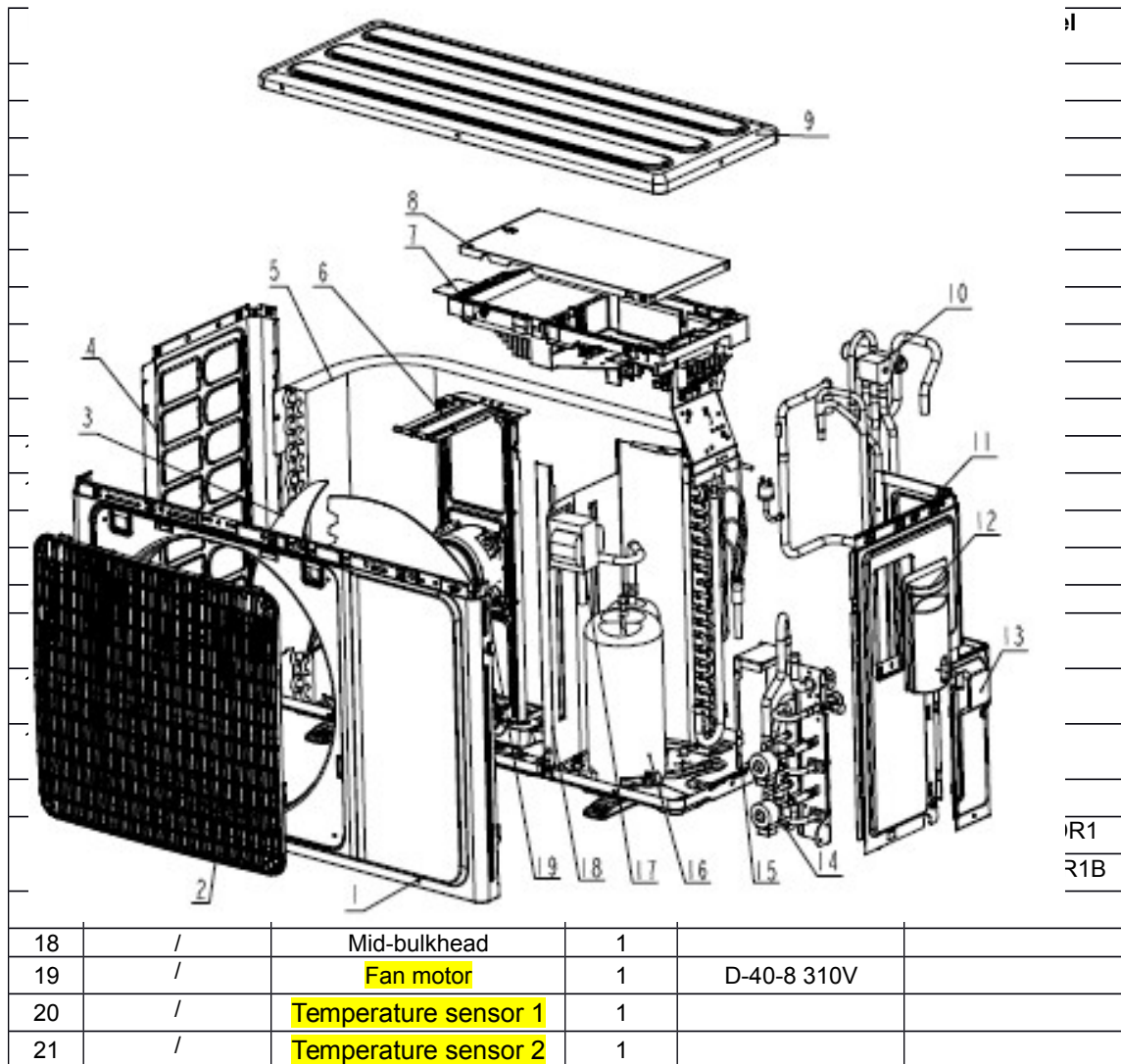


AM4-H36/4DR1 AM5-H42/4DR1

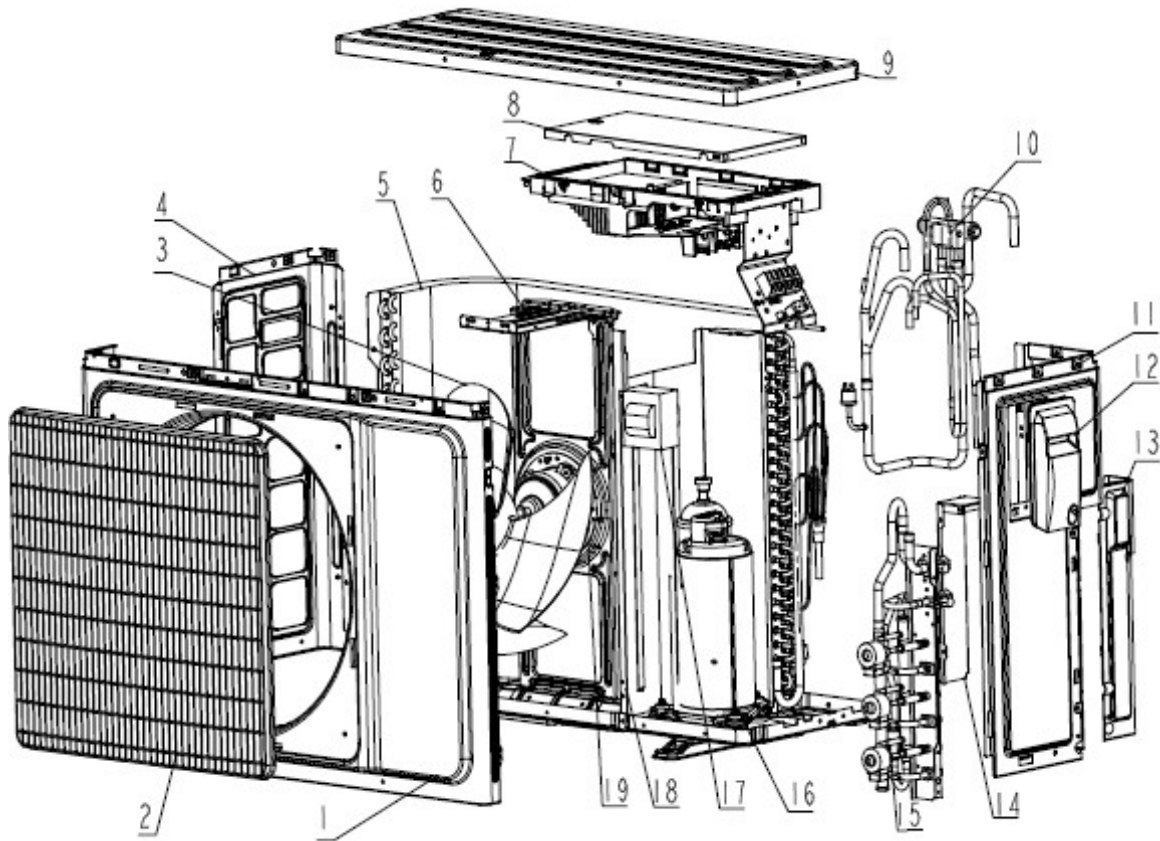


7. Exploded View

AM2-H14/4DR1、AM2-H18/4DR1B

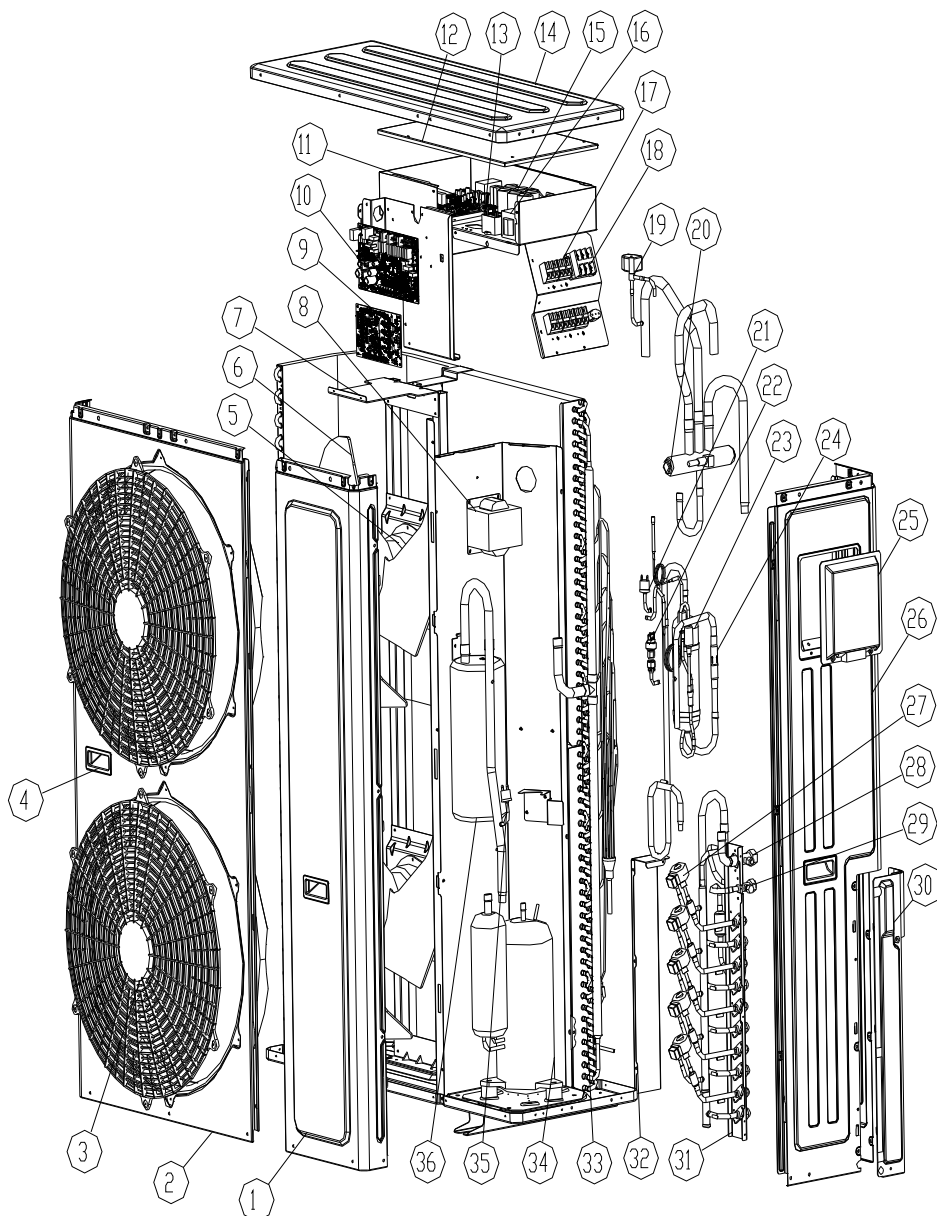


AM3-H21/4DR1 AM3-H27/4DR1B



	/		1	ATM240D57UKP	AM3-H27/4DR1A
17	/	Resistor	1	DK20-5D2-50	AM3-H21/4DR1A
	/		1	DK25-5D2-50	AM3-H27/4DR1A
18	/	Mid-bulkhead	1		
19	/	Fan motor	1	D-65-8 310VDC	
20	/	Temperature sensor 1	1		
21	/	Temperature sensor 2	1		
22	/	Temperature sensor 3	1		

AM4-H36/4DR1 AM5-H42/4DR1



NO.	Material code	Part name	Qty	remarks
1	/	Front panel small	1	
2	/	Front panel big	1	
3	/	Plastic grille	2	
4	/	Handle	3	
5	/	Fan motor	2	CW85C、CW85D
6	/	Fan blade	2	528*165
7	/	Motor bracket	1	
8	/	Resistor	1	DK-5mH-30A
9	/	Pcb extension	1	
10	/	Main pcb	1	
11	/	Driving pcb comp	1	
12	/	Control box cover	1	
13	/	Fan capacitor	2	4.0μF/450VAC/70/2000h
14	/	Top cover	1	

15	/	Capacitor board	1	
16	/	Transformer	1	
17	/	Terminal block 3p	4 or 5	
18	/	Terminal block power	1	
19	/	Magnetism valve	1	
20	/	4-way valve body	1	
21	/	High pressure switch	1	4.2/3.3
22	/	High pressure sensor	1	2HMP6-5 L=600
23	/	Oil separator	1	VR160WH
24	/	Check valve	1	
25	/	Electrical cover	1	
26	/	Right side panel	1	
27	/	E-exp valve assembly	4 or 5	DPF(Q)1.5(R410a)
27.1	/	Electronic expansion valve coil (blue)	1	
27.2	/	Electronic expansion valve coil (red)	1	
27.3	/	Electronic expansion valve coil(white)	1	
27.4	/	Electronic expansion valve coil(black)	1	
27.5	/	Electronic expansion valve coil(yellow)	1	
28	/	Service valve 5/8"	1	
29	/	Service valve 3/8"	1	
30	/	Service valve cover	1	
31	/	Valve bracket	1	
32	/	Back side panel	1	
33	/	Cond asm	1	
34	/	Compressor	1	QXAS-D32zX090B
	/	Oil heating belt	1	
35	/	Low pressure switch	1	0.3/0.1
36	/	Middle panel	1	
37	/	Temperature sensor 1	1	
38	/	Temperature sensor 2	1	
39	/	Temperature sensor 3	1	

8. Installation

8.1 Preparation and equipments before installation

1	Please buy following spare parts from your local market before installation
2	Hung bolts M12, 4 pcs
3	Drainage pipe PVC
4	Copper connecting pipe
5	Adhesive belt (big size) 5 pcs, (small size) 5 pcs
6	Heat insulation material used to connect copper pipe (PE foam material, its thickness is more than 8mm)
7	Power cable, electrical wire between indoor and outdoor unit(Must be in accordance with the wire diameter in the wiring diagram)
8	Acetylene cylinders, oxygen cylinders (when longer pipe used it should be welded)
9	One set pipe cut machine. (cut copper pipe)
10	Refrigerant cans, electronic balance (when longer pipe used additional gas should be charged)
11	Pressure gauges, pipe clamp, welding torch, 2B silver electrode
12	Wrench 2 pcs, one of them is with adjustable torque wrench(42N.m,65N.m,100N.mm)
13	Nitrogen cylinder (in order to prevent oxidation when welding, using Nitrogen to replace the air)

Select installation position of outdoor unit

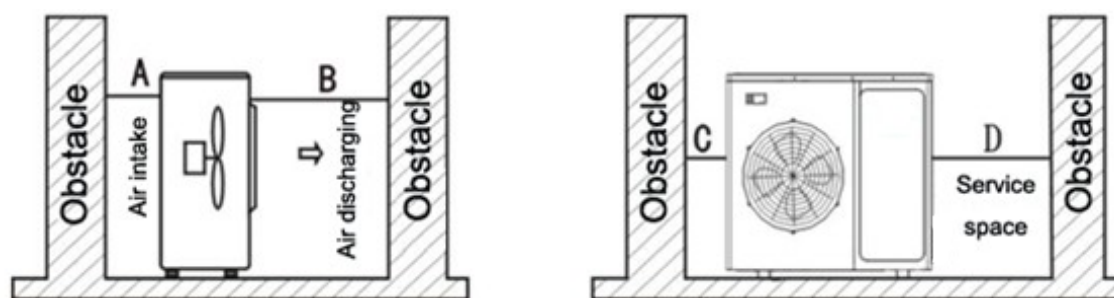
- ◇The site shall be strong enough to bear its weight, prevent noise and vibration.
- ◇The site shall be ensured to avoid direct sunshine, if necessary set a sunshade above the outdoor unit.
- ◇The site shall be easy to drainage the rain water and the frost water.
- ◇The site shall be ensured that the outdoor unit will not be covered by snow LD ring the winter season.
- ◇The site shall be ensured that the outlet is not facing the strong wind.
- ◇The site shall be ensured that outlet air and operation noise will not affect the neighbors' daily life.
- ◇The site shall be ensured that the outdoor unit will not be affected by the garbage and oil mist.

Warning :

If outdoor unit working under such environment which contains oil (including machine oil) salt(marine areas), sulfide gas (hot springs and oil refinery areas), those substance may lead to the failure work of the outdoor unit.

Maintenance and ventilation space

- ◇The site shall be easy for ventilation then the outdoor unit can inhale and discharge air easily. What's more please reserve enough space for maintenance.



Note: Require A > 300mm; B > 1500mm; C > 300mm; D > 500mm;

Outdoor unit installation

- ◇Use size M10 bolt and nut to fasten the outdoor unit tightly on the bracket, keep it in the horizontal level. The suitable length for bolt shall 20mm over the base level, in order to minimize vibration please do set a rubber shock absorber.



- ◇If the outdoor unit is mounted on the wall or on the rooftop, in order to prevent earthquake and strong wind please fasten it as tightly as possible.
- ◇Set a drainage channel to ensure the condensing water can drain out smoothly.
- ◇Avoid that only four angles metal sheet to support the outdoor unit.

Transport

When the outdoor unit is to be lifted, please use two slings longer than 8m and insert cushioning material between the slings and outdoor unit to avoid damaging the casing.

8.2 Connection piping installation

Piping installation precaution

Please choose copper pipe as the piping.

◇If the piping installation needs welding:

Please welding before fasten the nut, when welding using nitrogen gas to replace the air in the pipe in order to prevent oxidation.

◇If there are many points to be welded ,please set a filter in the pipe(buy from local market)

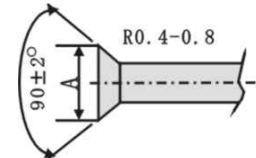
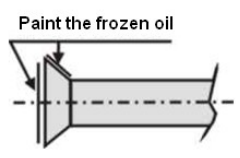
◇Please use nitrogen gas or air to remove the dust and water in the pipe,

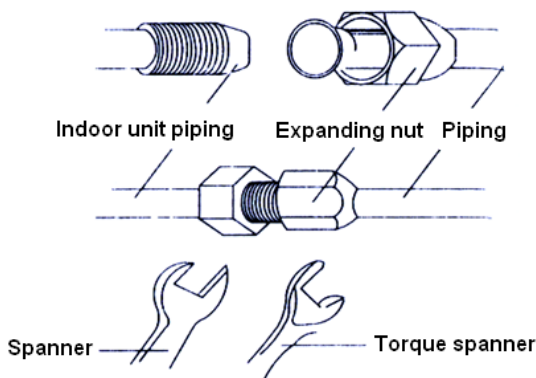
◇Please lay out the piping according to the tend towards of the piping, but it is not allowed more than 3 times curved at the same point of the pipe(if do like this the pipe will become rigid)

◇When using pipe bending machine, the curvature shall not be too small or it will affect the refrigerant flow.

Piping specification selection

As to the detail selection please take reference to the cooling capacity adjust index figure during different installation situations.

Piping diameter	Tighten torque	Expanding size (A)	Expanding shape	Paint the frozen oil
1/4in(φ6.35mm)	15-19(N·m)	8.3-8.7mm		
3/8in(φ9.52mm)	35-40(N·m)	12.0-12.4mm		
1/2in(φ12.7mm)	50-60(N·m)	15.4-15.8mm		
5/8in(φ15.88mm)	62-76(N·m)	18.6-19.0mm		
3/4in(φ19.05mm)	70-75(N·m)	22.9-23.3mm		



Piping connection

◇Using expanding machine to expand accessories, the size of horn shown in the above figure:

◇Paint a thin layer of frozen oil at both inside and outside part of the expanding.

◇Make the expanding right to the screw thread shape connection of the indoor unit, using hands to tighten the nut then using a wrench to tighten the nut again.

◇Take out the cover of the indoor unit gas valve and liquid valve, make the expanding right to the stop valve of outdoor unit, using hands to tighten the nut then using a wrench to tighten the nut again.

Equivalent pipe length conversion

Equivalent pipe length means converting pipe elbow to straight pipe length after considerate the pressure loss.

Elbow and Oil loop conversion tablet

Pipe Dia.(mm)	Type	Bend	Oil Loop
6.35		0.10	0.7
9.52		0.18	1.3
12.70		0.20	1.5
15.88		0.25	2.0
19.05		0.35	2.4
22.02		0.40	3.0

Equivalent pipe length L = Actual Pipe length L+ Bend Qty× Equivalent pipe bend length+ Oil Loop Qty× Equivalent Oil Loop length

Sample:

AMCA-H09/4R1A Actual Pipe length is 25 meters, Gas pipe diameter is 9.52mm. If there's 5 bends and 2 oil loops during the installation, then the equivalent pipe length should be:

$$L=25+0.18\times 5+1.3\times 2=28.5(m)$$

Specification of Connection Pipe for Indoor Unit and Outdoor Unit

Cooling Capacity(Btu/h)		1 drive 2	1 drive 3	1 drive 4	1 drive 5
Connection Pipe (mm)	Liquid Pipe	Φ6.35			
	Gas Pipe	Φ9.52			
Max. length for all rooms (m)		40	60	80	80
Max. length for one IU (m)		25	30	35	35
Max. height difference between IU and OU (m)		15	15	15	15
Max. height difference between IUs (m)		10	10	10	10
Max. oil loops		2			
Max. Bend Qty		5			
Extra R410a per meter when the pipe length is more than 7.5 meter (kg)		0.022			

◇ **Additional refrigerant charge**

Outdoor series	1 drive 2	1 drive 3	1 drive 4	1 drive 5
Chargeless pipe length (m)	15	22.5	30	37.5
Additional refrigerant charge(g)	22x(length for all rooms - 15)	22 x (length for all rooms – 22.5)	22x(length for all rooms - 30)	22x(length for all rooms – 37.5)

Emptying or vacuum

Before charging the refrigerant to the system, to ensure that there is no impurities, water or non-condensable gas. So, emptying and vacuum operation should be carried out.

◇ Vacuum: when process this operation please be sure that the connection pipe is tightened up.

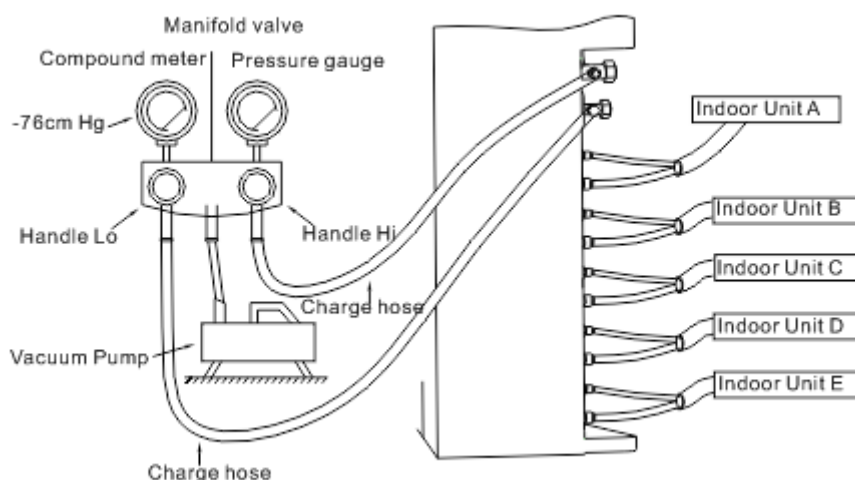
1. Screw off the cover of maintenance valve connection, connect the pressure gauge to the connection of maintenance valve
2. Connect the vacuum pump to the pressure gauge, turn on the vacuum pump and pressure gauge to process the vacuum operation toward the indoor unit and piping, while to ensure that the absolute pressure is no less than 50Pa after this operation.
3. Turn off the pressure gauge and vacuum pump to keep the pressure in the same level in 20 minutes.

◇ Emptying: when process this operation, please disconnect the high pressure valve with liquid valve.

1. Connect the gas valve of the stop valve to the thimble side of the rubber hoses, the other side of rubber hoses should be connected to the refrigerant tank.
2. Open the refrigerant tank valve, using the refrigerant inside the tank with high speed to empty the air in the indoor unit and the connection piping. When the outlet air becomes mist (it feels cold by touching it), then the air is emptied.
3. When ensure that the air is emptied, connect and tighten the high pressure valve of outdoor unit stop valve and liquid side connection pipe, keep this state more than 10 seconds.
4. Use soapy what to test each connection junctions (including lengthen piping welding junction)
5. Confirmed that there is no leakage, turn off the valve of refrigerant tank, take down the rubber hose as well.

◇ Turn on the high-low pressure valve of the outdoor unit.

After vacuum and emptying, screw back the cover of the maintenance valve of outdoor unit low pressure valve, screw off the high-low pressure valve of the outdoor unit (note: shall totally turned off). Connect the refrigerant to the system.



Heat insulation package of piping

◇ Use heat insulation material with good insulation performance to wrap the pipe.

Incorrect	Correct		
<ul style="list-style-type: none"> ● Gas pipe and liquid pipe can't be insulated together <ul style="list-style-type: none"> ● Piping joints should be insulated 	<ul style="list-style-type: none"> ● Only gas pipe insulation (Cooling-only) 	<ul style="list-style-type: none"> ● Gas and liquid pipe insulation 	<ul style="list-style-type: none"> ● Insulation support

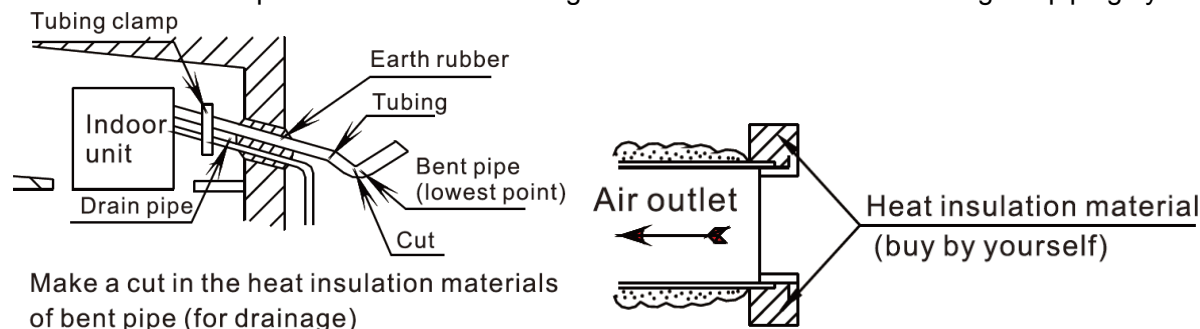
Notes

Drainage pipe and connection piping should be wrapped by heat insulation material respectively lift the air conditioner is proved my dew conditioner experiment. But if it keeps on working in high humidity (the dew temperature is more than 23°C) environment which may lead to water leakage, please use following additional insulation material:

- ◇Glass fiber insulation material with the thickness between 10~20mm can be used.
- ◇The part of indoor unit which get in touch with the back side of ceiling should pasted with insulation material.
- ◇Besides the previous more than 8mm thick insulation material, connection piping (both gas pipe and liquid pipe), drainage pipe should be wrapped by additional 10~30 mm thick insulation material.

Seal the hole on the wall.

- ◇To prevent rainwater or other foreign bodies from entering the room and air-conditioner, the gap between wall hole and tubing, drain pipe and electric wire should be sealed with mastic, sealant rubber or putty.
- ◇If the outdoor unit is higher than indoor unit, tubing should be bent to ensure that the lowest point of the tubing is lower than the wall hole to prevent rainwater entering the room or air-conditioner along the piping system.



Additional refrigerant charge

When pipe length exceeds 5m, please add refrigerant according to the table below:

Connection piping	Piping size)		Additional refrigerant charge amount (kg/m)
	Gas pipe	Liquid pipe	
Piping between indoor and outdoor unit	φ9.52×0.75mm	φ6.35×0.75mm	0.02
	φ12.7×1mm	φ6.35×0.75mm	0.02
	φ15.88×1mm	φ9.52×0.75mm	0.05
	φ19.05×1mm	φ9.52×0.75mm	0.05
	φ19.05×1mm	φ12.7×1mm	0.12

Oil grade and standard oil-filled volume of Compressor

Outdoor unit model	Brand	Compressor model	Oil type	Oil volume(cm ³)
AM2-H14/4DR1	GMCC	ASN108D22UFZ	VG74	340
AM2-H18/4DR1B	GMCC	ASM135D23UFZ	VG74	450
AM3-H21/4DR1	GMCC	ATM150D23UFZA2	VG74	500
AM3-H27/4DR1B	GMCC	ATM240D57UKP	VG74	670
AM4-H36/4DR1	LANDA	QXAS-D32zX090B	FV50S	950
AM5-H42/4DR1	LANDA	QXAS-D32zX090B	FV50S	950

Others

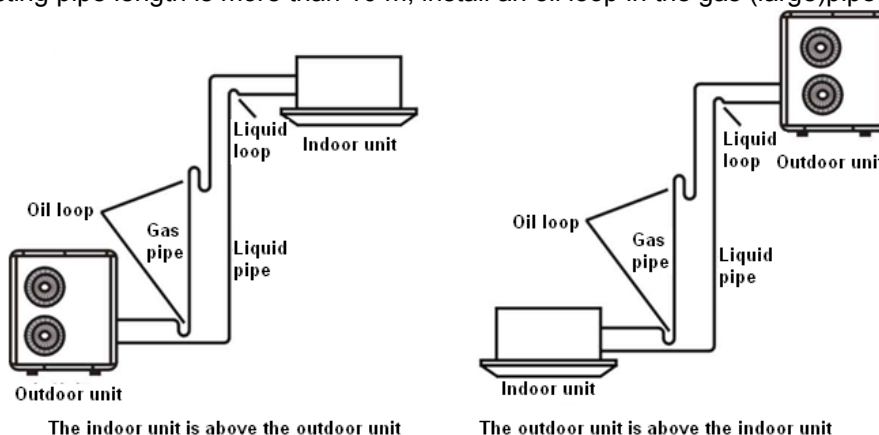
Make sure that the oil can return to the unit smoothly.

- ◇Horizontal pipes should incline toward the outdoor unit using a 20:1 slope.
- ◇If there is a height difference(ΔH) between the indoor and outdoor unit, oil loops should be installed in the inter connecting gas (large) pipe;

When ΔH ≤ 5 meters, an oil loop should be installed at the bottom of the gas (large) pipe; if the constant rise distance is too long, an oil loop should be installed in the gas (large) pipe every 10 meters.

When ΔH > 5 meters, then for every 5 meters an oil loop must be installed at the bottom of the gas (large) pipe, and a short loop (liquid ring) should be installed at the exit of the indoor unit liquid (small) pipe;

◇When the outdoor and indoor units are at the same elevation, If the horizontal connecting pipe length is less than 10 m,the oil deposit bend and liquid ring do not need to be installed.
If the horizontal connecting pipe length is more than 10 m, install an oil loop in the gas (large)pipe every 10 meters.



Note:
This chart is for explanation purposes. An actual installation will differ from this according to the site conditions. When making an oil loop the radius of the bend should be between 1.5 and 2 times the pipe diameter.

8.3 Electrical connection

8.3.1 Electrical connection precaution

Warning	Installation of electric items must be carried out by qualified, professional technicians.
	An isolated circuitry should be fixed with whole-pole disconnection devices, which is with at least 3mm gap of touch point . Power supply and indoor to outdoor connection wire should use special cable.
	Providing the necessity of installation or replacement, the professional technician of service store appointed by manufacturer must be required, while self-operation by users is prohibited.
	In case of any electric shock accident, the creepage protection devices /power supply on-off switch and breaker must be required with.
	The specification of fuse for single phase control board is F5AL 250V, while for 3 phase control board, both indoor and outdoor unit, it is F3.15AL 250V.
	Machine must be earthed surely. or it'll be probably cause creepage.
Notice	The earth line is neither allowed to connect to gas pipe, water pipe ,circuitry of telephone or lighting rod, nor to the earth line of other devices.
Others	Please fix power supply cord and connection wires of indoor and outdoor, in accordance with circuit diagram

Fix the cords into terminal boards properly and safely with cable fixation tools to avoid any danger caused by the power cord under outside forces. After fixation, use bind tape (affixed) to bind wires avoiding any collision with other components like compressor, copper pipes...etc

8.3.2 Electrical connection

Wiring diagram of indoor & outdoor, refer to the section of part 1

Recommendation of power supply cord

Power supply:220~240V,50Hz

Capacity (BTU)	Model	Power supply	Indoor power cable
7000	AMWM-H07/4R1(#) AMSD-H07/4R1	Outdoor unit 220-240V~50Hz IndoorUnit 220-240V~50Hz	3×1mm ²
9000	AMWM-H09/4R1(#) AMCA-H09/4R1A AMCF-H09/4R1 AMSD-H09/4R1		3×1mm ²
12000	AMWM-H12/4R1(#) AMCA-H12/4R1A AMCF-H12/4R1 AMSD-H12/4R1		3×1mm ²
18000	AMWM-H18/4R1(#) AMCA-H18/4R1A AMCF-H18/4R1 AMSD-H18/4R1		3×1mm ²

Power supply	Series	Max. Current(Normal)		
		Rated cooling (35/24 27/19)	Maximum frequency operation (39/26 32/23)	Maximum capacity operation (43/26 32/23)
Outdoor unit 220-240V~50Hz	1 drive 2(14K)	8.9	9.7	8.6
	1 drive 2(18K)	9.9	10.6	9.5
	1 drive 3(21K)	12.4	13.2	12.8
	1 drive 3(27K)	15.6	16.3	15.0
	1 drive 4(36K)	22.4	24.1	21.9
	1 drive 5(42K)	23.0	24.7	22.6
Outdoor unit 187V~50Hz	1 drive 2(14K)	9.9	10.7	9.6
	1 drive 2(18K)	10.9	11.6	10.6
	1 drive 3(21K)	13.4	14.2	13.8
	1 drive 3(27K)	16.6	17.3	16.0
	1 drive 4(36K)	22.6	24.3	22.1
	1 drive 5(42K)	23.2	24.9	22.8

Notice:

- ◇ Above mentioned power supply cord is the cable which connect air on-off of indoor to indoor/outdoor unit. Power supply cord of indoor/outdoor unit is the power supply cable connecting indoor and outdoor unit
- ◇ The section area of power supply cord core is minimized one. To avoid voltage pressure dropped down, while longer power supply cord needed, the section area should be enlarged for one gauge.
- ◇ The connection wires to indoor unit is the cable of 27IEC53(RVV) type, 300/500V; while the connection wires to outdoor unit and the connection wires from outdoor to indoor unit is the multi-end of cable (neoprene)of 245IEC57(YZW)type,300/500V. if the single core with double skin type of cable is chosen for installation,, please choose 1# gauge of section area and wrapped with special jacket for electrician.

- ◇ All of the ceiling/floor type unit is without accessorial electric heating

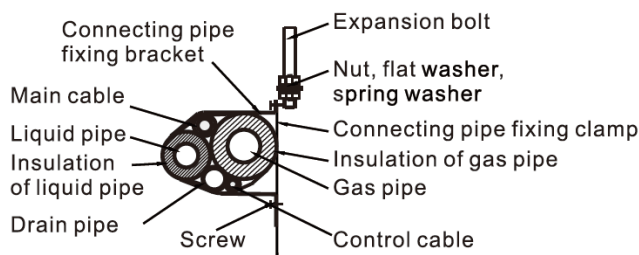
8.3.3 Wire connection

Indoor wire connection

Remove electric control box cover of indoor unit, connect the wires in accordance with the electric diagram mentioned on the back of the cover. The wire ends must be tightly fixed into terminal boards. The earth wire must be fixed into appointed position.

Outdoor wire connection

- ◇ Remove the electric item cover, which is positioned in the right side of outdoor unit, connect the wires in accordance with the electric diagram on the back of the cover.
- ◇ Be sure that pressing the wires tightly with the terminal boards while it through the board, the wire ends must be tightly fixed into terminal boards. The earth wire must be fixed into appointed position.
- ◇ After all the wire connected, bundle connection pipe, connection wires and drainage pipe with strips like mentioned drawing below:



Notice:

- ◇ **Be sure don't make the drainage pipe flat while bundled.**

8.4 Commissioning

Check installation condition

- ◇ Check indoor/outdoor unit installation and wire connection in accordance with the requirement of service manual.
- ◇ Check the power supplying, diameter of wires, air on-off switch and make sure that the items can be matched with machines, earth wire connection safety.
- ◇ Check air inlet/outlet duct and make sure that the items is clean, operating smoothly.

Commissioning

- ★ The system should be power on for 8 hours for preheat before the first time start up.
- ★ During winter, while after 8 hours power off, the performance test should be 2.5 and half hours power on later:
 - ◇ Power on the system and start up in cooling mode.
 - ◇ After 3 minutes compressor protection, check whether there is normal cooling air come from indoor unit and if there is abnormal noise come from indoor/outdoor units
 - ◇ Configure the mode with "fan" and check whether there is high speed airflow come from indoor unit.
 - ◇ Operate "swing" mode, check whether the louver is properly swaying.
 - ◇ Press the other buttons on the remote controller and check whether the complete unit is on proper working condition
 - ◇ Keep on running for 1 hour with "cooling" mode and check if the drainage system is on proper condition
 - ◇ Switch the mode for "heating" and check whether there is warm airflow come from indoor unit, whether there is abnormal noise come from indoor/outdoor units
 - ◇ After confirmation of normal working condition, press the "on-off" button to stop the system.
 - ◇ At last, train the end users with operation, maintaining and special notice.

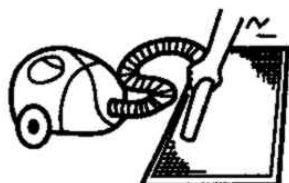
8.5 Daily maintenance

Clean filter net

- ◇ Before cleaning the filter, ensure the unit is switched off and the power is off.
- ◇ Forbidden to use water clean the filter , it will hurt PCB or get an electric shock.
- ◇ When cleaning filter net, be sure to stand steadily, and please be careful if using a lift or others.

Washing filter net

- ◇ Use vacuum or water to clean the net.
- ◇ In order to ensure the best performance of your air conditioner, clean the air filter regularly, We recommend cleaning once a month or more frequently if required.
- ◇ When the filter is very dirty it can be washed in detergent and hot water (below 45°C).
- ◇ Ensure the filter is fully dry before reinstallation to avoid risk of electric shock or short circuiting.
- ◇ Do not dry the filter using direct sunlight.



Check at the beginning of each season

- ◇ Check whether there are no physical obstructions at the air inlet or outlet of either indoor or outdoor unit.
- ◇ Check whether there are garbage at the water outlet.
- ◇ Check whether electrical cables are in good condition, particularly the earth cable.
- ◇ When power on, check weather letters display on the screen of the wired controller.
- ◇ When working in winter, the system must be power on for 8 hours before the first time start up.

Check at the end of service season

- ◇ Operate for 2~3 hours under the ventilation condition; remove the moisture of the indoor unit..
- ◇ If not use air conditioner in a long time, please cut off the power to save energy, the letter will disappear on wired controller.
- ◇ Take the batteries out of remote controller.
- ◇ Use dust proof to cover the **outdoor unit**.

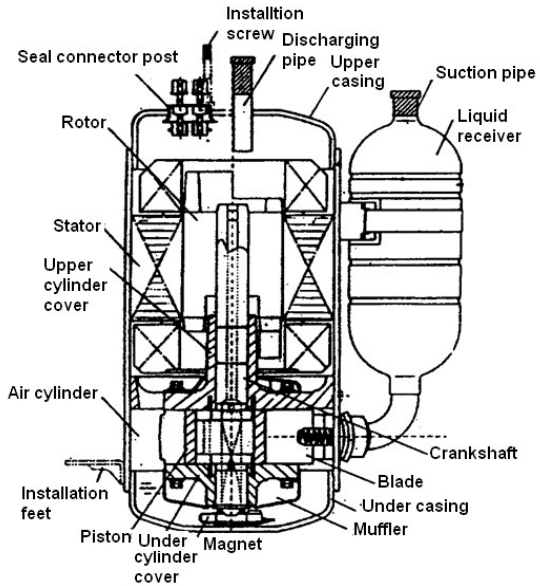
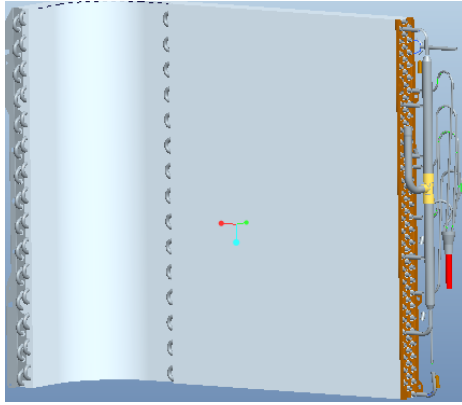

8.6 Sound level of different running status

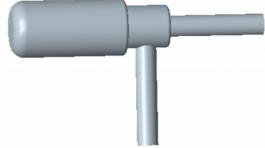
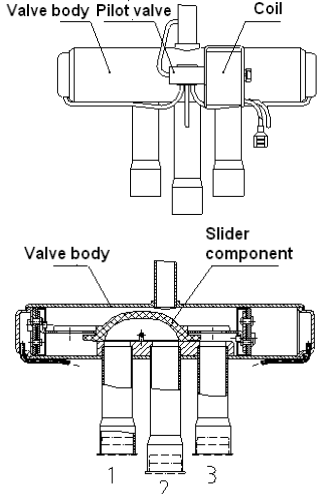
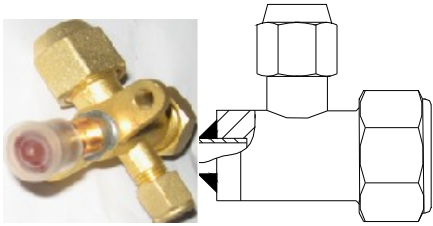
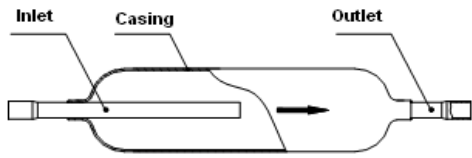
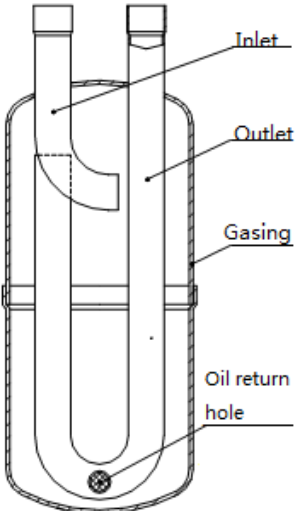
90	53.5	54.7	55.8	56.2	57.6	
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Part 4 Trouble shooting


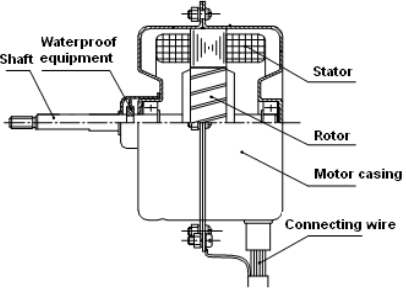

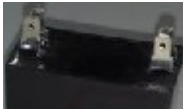
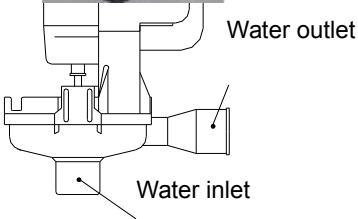
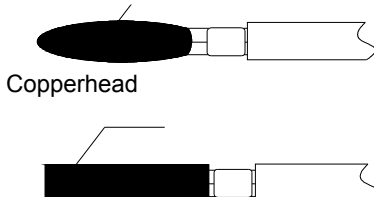
1. Main components of air conditioner.....	97
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1. Main components of air conditioner

Appellation	Figuration and inner configuration	Instruction
Compressor		<p>The function of compressor: after refrigerant evaporate in evaporator, compress the low temp and low pressure refrigerant gas, make the gas become high temp and high pressure gas, and then send the gas to condenser, make the refrigerant cycle.</p>
Condenser (heat exchanger)		<p>The function of condenser: Make the high temp and high pressure refrigerant gas discharged by compressor become liquid [make the gas heat exchange with air], (Remark: when heating, condenser will become evaporator)</p>
Evaporator (heat exchanger)		<p>Function of evaporator: Make the low pressure refrigerant liquid from capillary or expansion valve become gas(make the liquidheat exchange with air)</p>

<p>EXV (Electronic expansion valve)</p>		<p>Function of EXV: Utilize aperture and length change bring pressure gap, control refrigerant flow quantity and pressure. EXV is controlled by PCB, more precisely.</p>
<p>Four way valve</p>		<p>Function of 4 way valve: When change cooling mode into heating mode, it will change the flow direction of refrigerant; When heating, the valve get electricity(cooling without electricity), the slip assembly move to the right connect pipe 2 and 3, so change the flow direction.</p>
<p>Stop valve</p>		<p>Function: To stop or release refrigerant, only on/off, can't adjust or throttle</p>
<p>Muffler</p>		<p>Function: Eliminate the system noise</p>
<p>Gas and liquid separator</p>		<p>Function: Separate liquid and gas refrigerant, to protect the compressor</p>

2. Electrical system main components

Appellation	Figuration and inner configuration	Instruction
PCB		<p>Function: Via program to control the relay, make every components on/off according to temperature and pressure variety, so to realize automatic control</p>
Fan motor		<p>Function: Drive the fan, make the indoor and outdoor unit have heat exchange with air.</p>
Pressure switch		<p>Function: To avoid the air conditioner work in a abnormal pressure, making the air conditioner work safety.</p>
Capacitor		<p>Induce the single-phase motor produce gyre magnetic field,connect with the accessory winding, and participate in the operation.</p>
Condensate pump		<p>Only for Cassette, the pump head is 1.2 meter,the condensate pipe must have over 1/100 descend angle, after unit cooling or dehumidify stops running, the pump will still work 3 minutes to clean the condensate.</p>
Sensor	<p>Plastic package</p>  <p>Copperhead</p>	<p>Physical properties will change along with the temperature, pressure change,used for check temperature and pressure.</p>

3. Poor efficiency explanation

During the process of using air conditioner, some phenomenon seems to be malfunction but actually not. Thus when cooling or heating effect does not achieve to your expectation, the following factors have to be ruled out

Phenomenon	Causing explanation
High outside temperature and too many people in the room, even air conditioner runs at full-load operation, the wind blowing out from air outlet is cold, but it is difficult to lower the indoor temperature, this is not malfunction.	When the outdoor temperature is higher, more heat penetrates into indoor space, which increases the cooling load of AC. If there are too many people(for example 10) and each person gives off 120W, totally 1200W, this will running out of half of AC cooling capacity, and the unit's cooling capacity this time is far from enough, indoor temperature is hard to lower down. It is normal phenomenon and do not mean useless of AC.
Power voltage is too low, causing AC uneasy to start and shut down after starting, or fuse be burned out etc.	If the electricity net voltage is too low, user should load a power manostat to keep voltage between 220V-380V for AC normally running
Select high wind speed but indoor temperature still at high side, air flow from the air outlet is too weak.	It is because air filter is too dirty or blocked making cooling capacity fail to be brought by air flow, causing cooling capacity inadequate. Take out filter and wash, the problem will be solved.
Select high wind speed, the vibration and sound of unit are severe.	Fan runs at high speed, severe vibration and sound of unit is normal phenomenon
Temperature controller adjusts improper and max cooling capacity is not utilized completely, thus indoor temperature can't lower down.	Check the temperature controller, and problem will be solved.
As for Heat pump air conditioner heating effect is not ideal during cold winter, this is normal phenomenon.	The lowest temperature is - 7°C when heating, below this temperature unit cannot heat effectively.

4. Failure phenomenon

Phenomenon	Causing explanation
Vapor comes out from indoor unit	The humidity of the room is too high, the moisture in the air become vapor when meet the cold airflow from AC
Noise	<ol style="list-style-type: none"> 1. When air conditioner stops running, there will be some noise, and this is because the refrigerant flows contrarily. Refrigerant expand or shrink according to temperature change. 2. Liquid sound is from refrigerant flowing
Sometimes,the room is smelly	<ol style="list-style-type: none"> 1. The AC itself will not be smelly, if it is smelly, it is because environment smell accumulated 2. Solution: clean the filter of indoor unit.
when heating, there is no wind at the beginning of starting unit	It is to prevent cold air blowing, please be patient

5. Electric components malfunction inspection

No	Component name	Inspection methods
1	Compressor	Using multi-meter ohm phase, there is correct resistance value among windings (single phase compressor refers to specification, three phase compressor resistance approximately equal), resistance of winding should be infinite.
2	Control board	Check whether any connection part of PCB loosen or drop off, printed tinsel and components have any burn, fade, breaking off or aging phenomenon, all joints exist short circuit phenomenon etc. Test the circuit board system in the term of voltage, pulse on, resistance variation, by using testing meter. Judge the output and input is normal or not according to electric principle diagram
3	Contacto	Press the contactor by hand, the contactor reacts immediately The contacting point of contactor has no burn and melt phenomenon The winding has resistance value below 1000Ω, but cannot be nil or infinite
4	4-ways valve winding	The winding has resistance value below 1000Ω, but cannot be nil or infinite
5	Capacitor	No expansion phenomenon apparently Measure capacitor by using capacitor phase of multi-meter
6	Sensor	Using multi-meter to measure resistance, find out temperature according to resistance table, the temperature should accord with sensor temperature. Resistance cannot be nil or infinite
7	Motor	No burning trace apparently Using multi-meter ohm phase, there is correct resistance value among windings (single phase compressor refers to specification, three phase compressor resistance approximately equal), resistance of winding should be infinite.

6. Failure code display

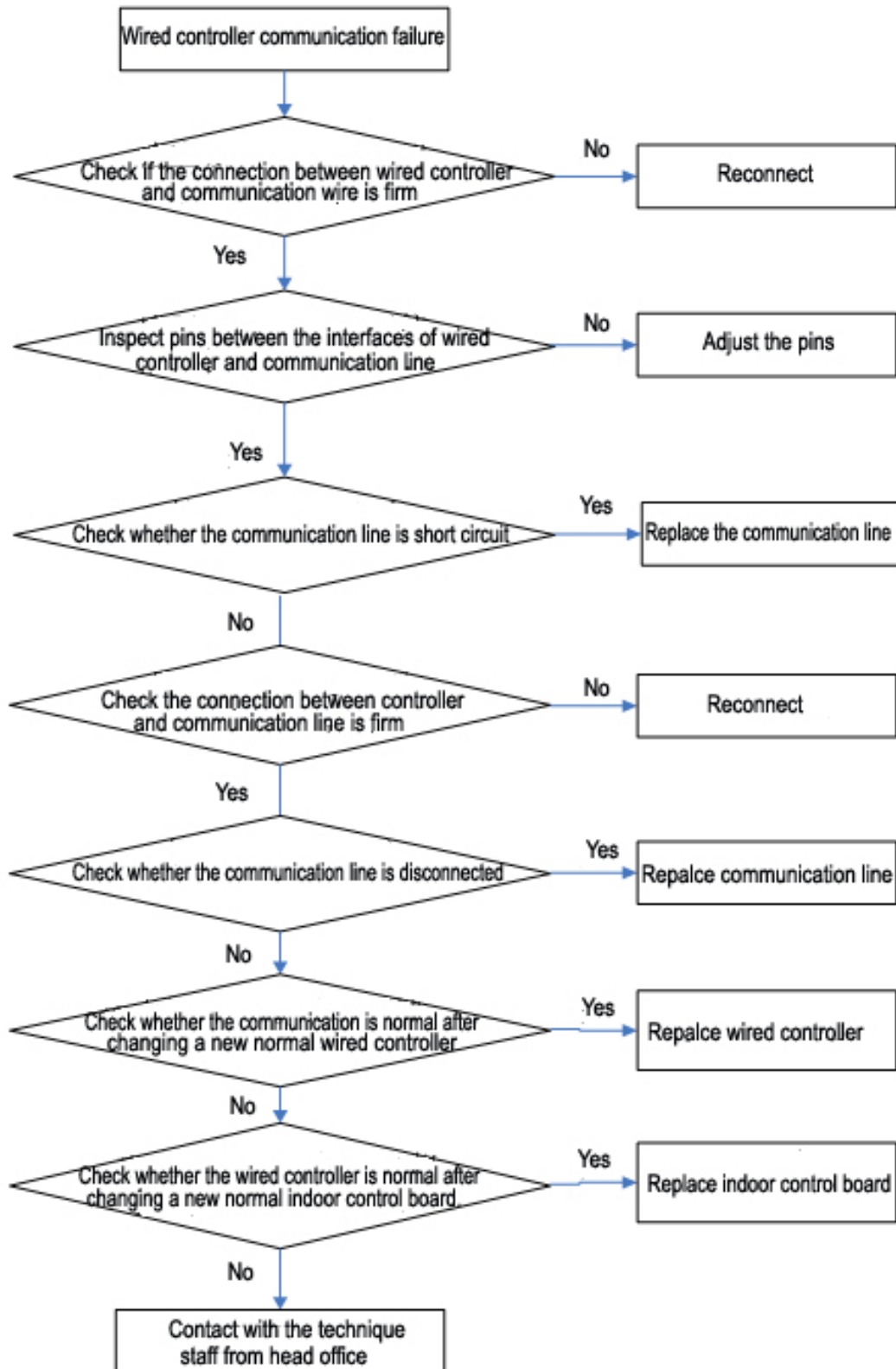
When air condition has failure, the timing lamp on light board of indoor unit or the wired controller will display different code according to different failure case.

S/N	Fault description	Fault code display	Unit phenomenon
1	Over/low power voltage protection	F7	Stop
2	Over/low main line voltage protection	F1	Stop
3	Over power current protection	P8	Stop
4	Low pressure switch protection	H6	Stop
5	High pressure switch protection	P2	Stop
6	Indoor high temp protection in heating mode	P6	Stop
7	Drain pump failure	H1	Stop
8	Communication failure of wire controller	H2	Stop
9	IPM module protection	L9	Stop
10	Indoor fan motor failure	E4	Stop
11	Outdoor ambient temp sensor failure	F6	Stop
12	Overload protection in cooling mode	P4	Stop
13	Suction temp sensor failure	FA	Stop
14	High discharge temp protection	P5	Stop
15	Low discharge temp protection	H5	Stop
16	4way-valve failure	H8	Stop
17	Indoor coil temp sensor failure	E3	Stop
18	Indoor ambient temp sensor failure	E1	Stop
19	Outdoor coil temp sensor failure	E2	Stop
20	Outdoor defrost temp sensor failure	E2	Stop
21	Evap inlet temp sensor failure	H3	Stop
22	Evap outlet temp sensor failure	H4	Stop
23	Outdoor DC fan motor failure	F1	Stop
24	Outdoor DC fan motor current abnormal protection	LD	Stop
25	DC fan motor phase lost protection	LE	Stop
26	DC fan motor step lost protection	LF	Stop
27	DC fan motor IPM protection	LH	Stop

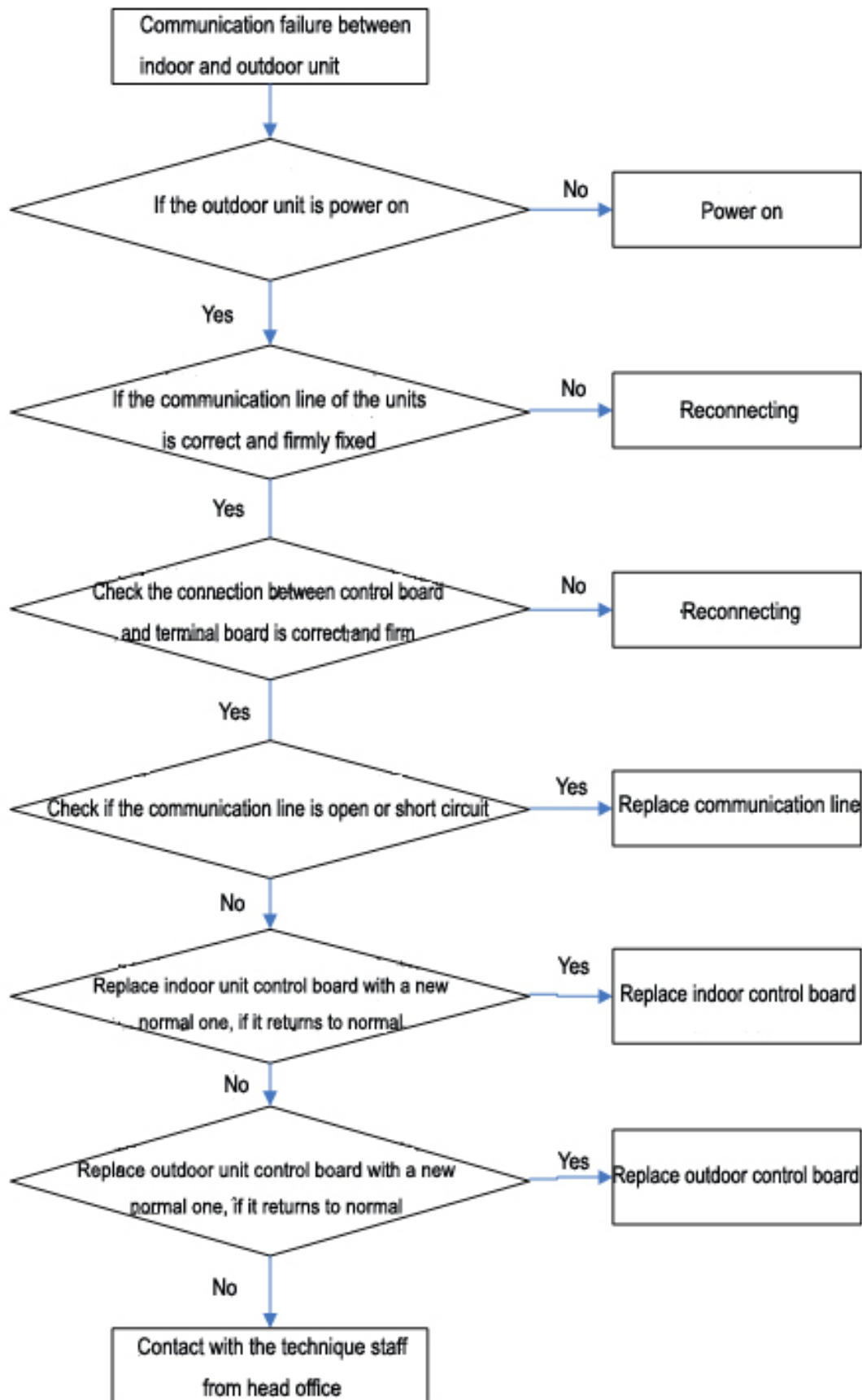
7. Failure analysis

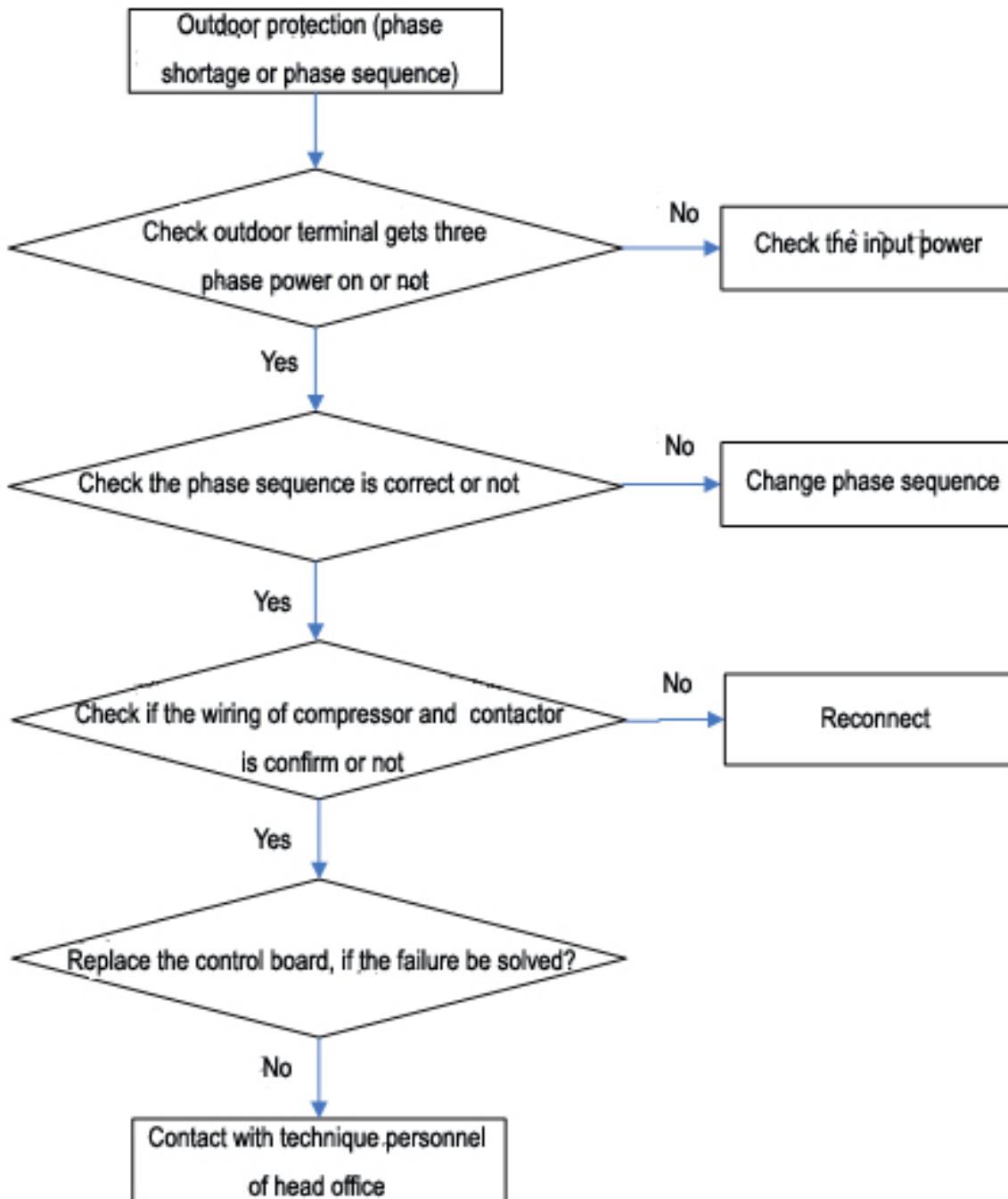
7.1 Analysis and Solution for Failure without Failure Code

Wired controller communication failure

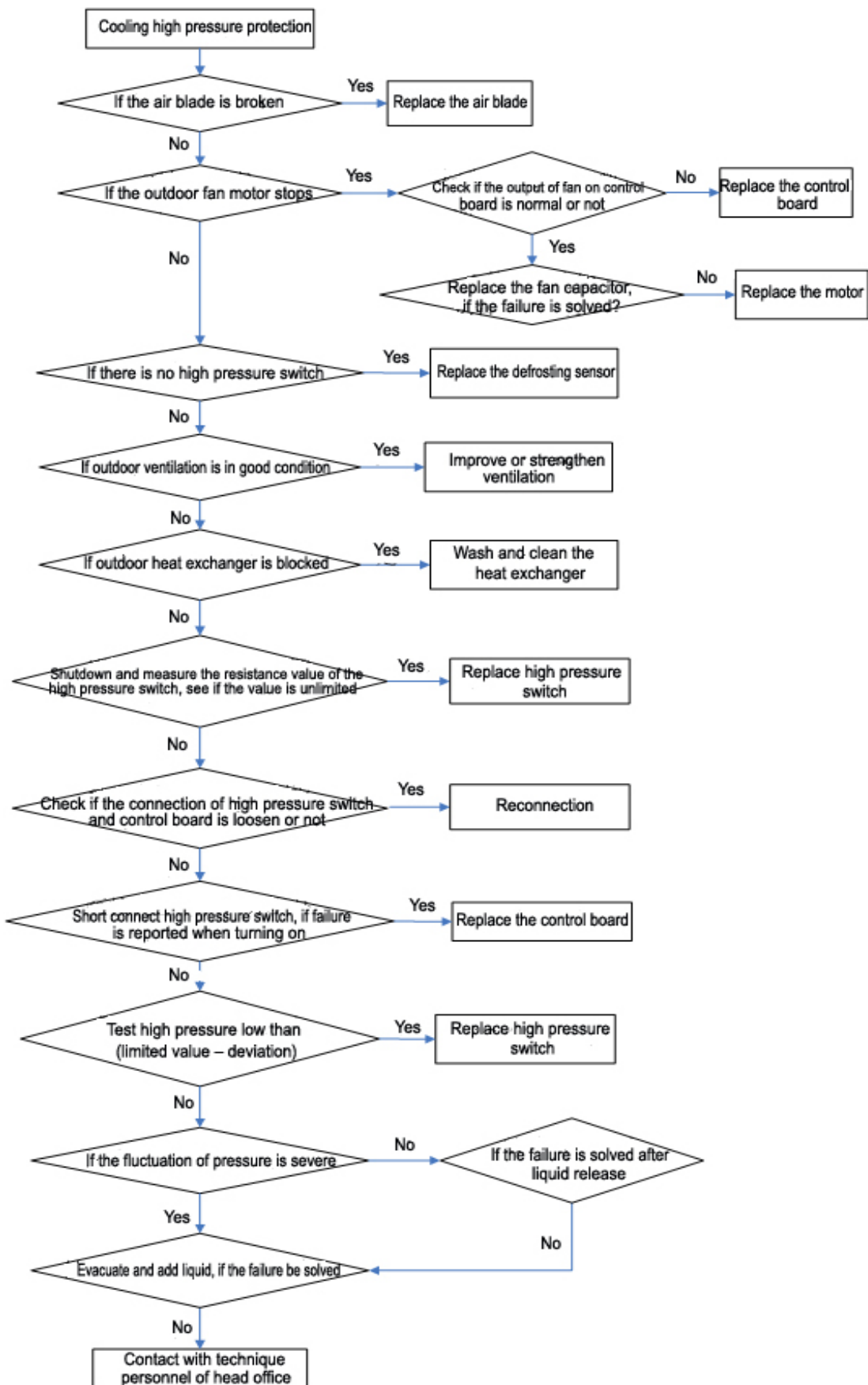


Communication failure between indoor and outdoor unit

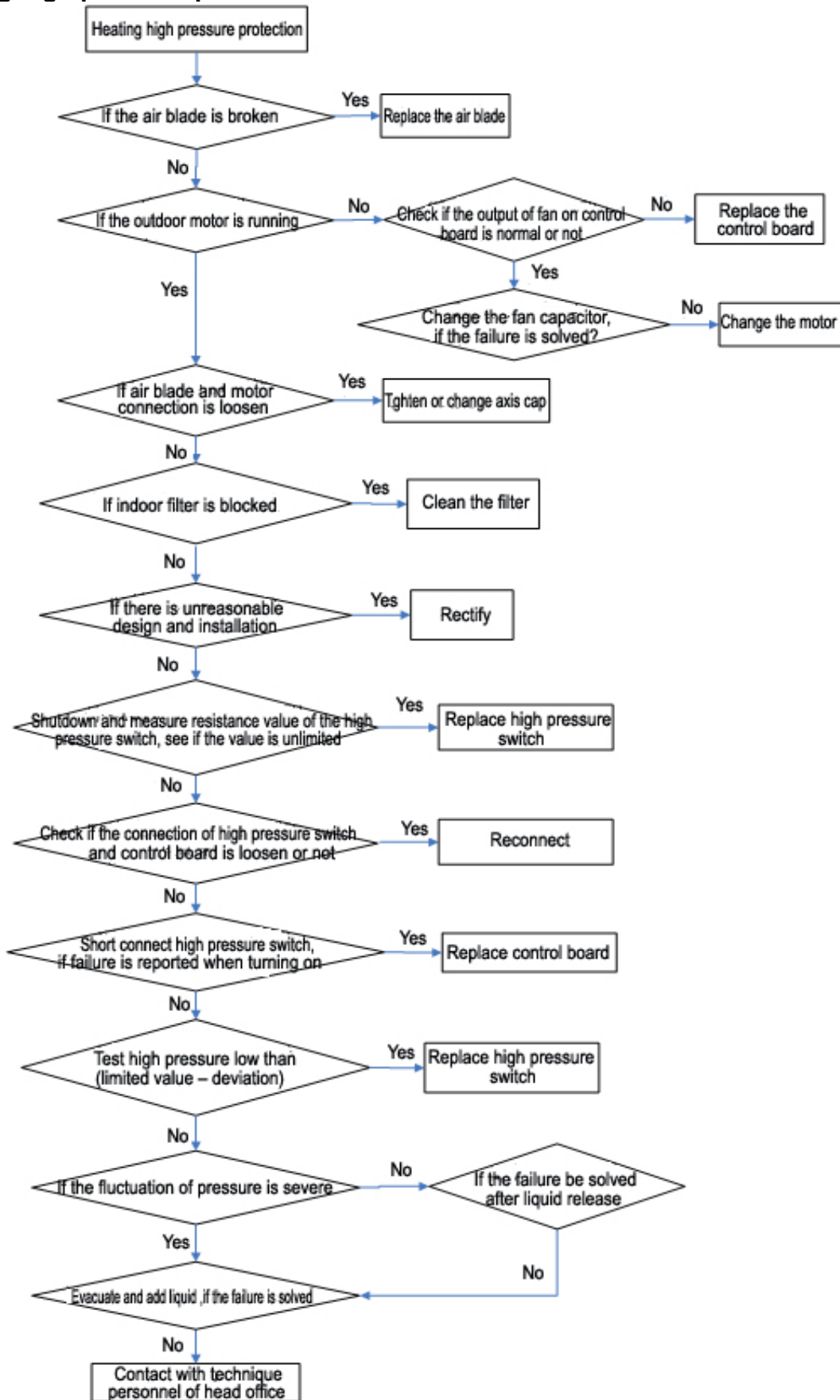


Outdoor protection(phase sequence)

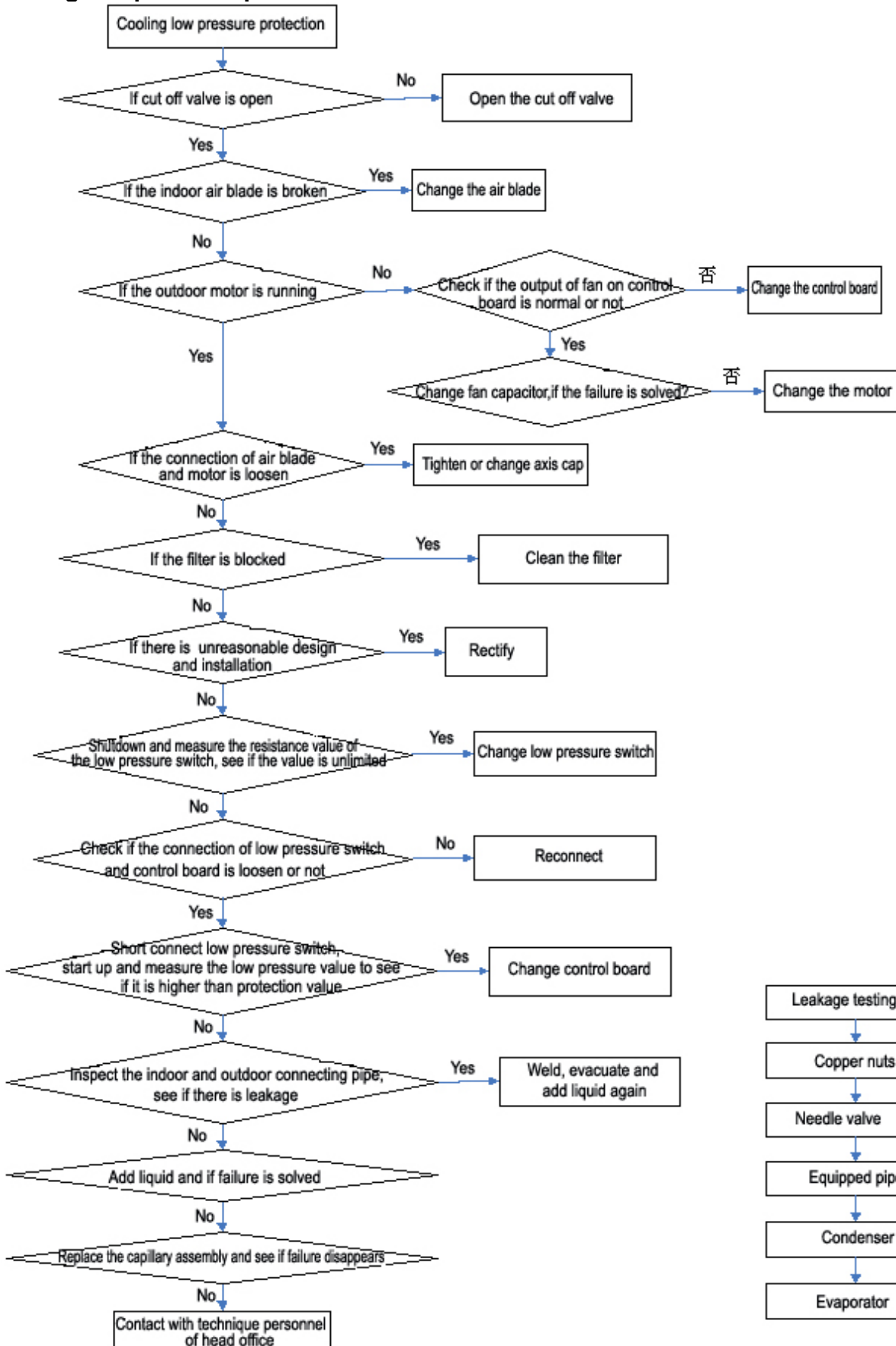
Cooling high pressure protection



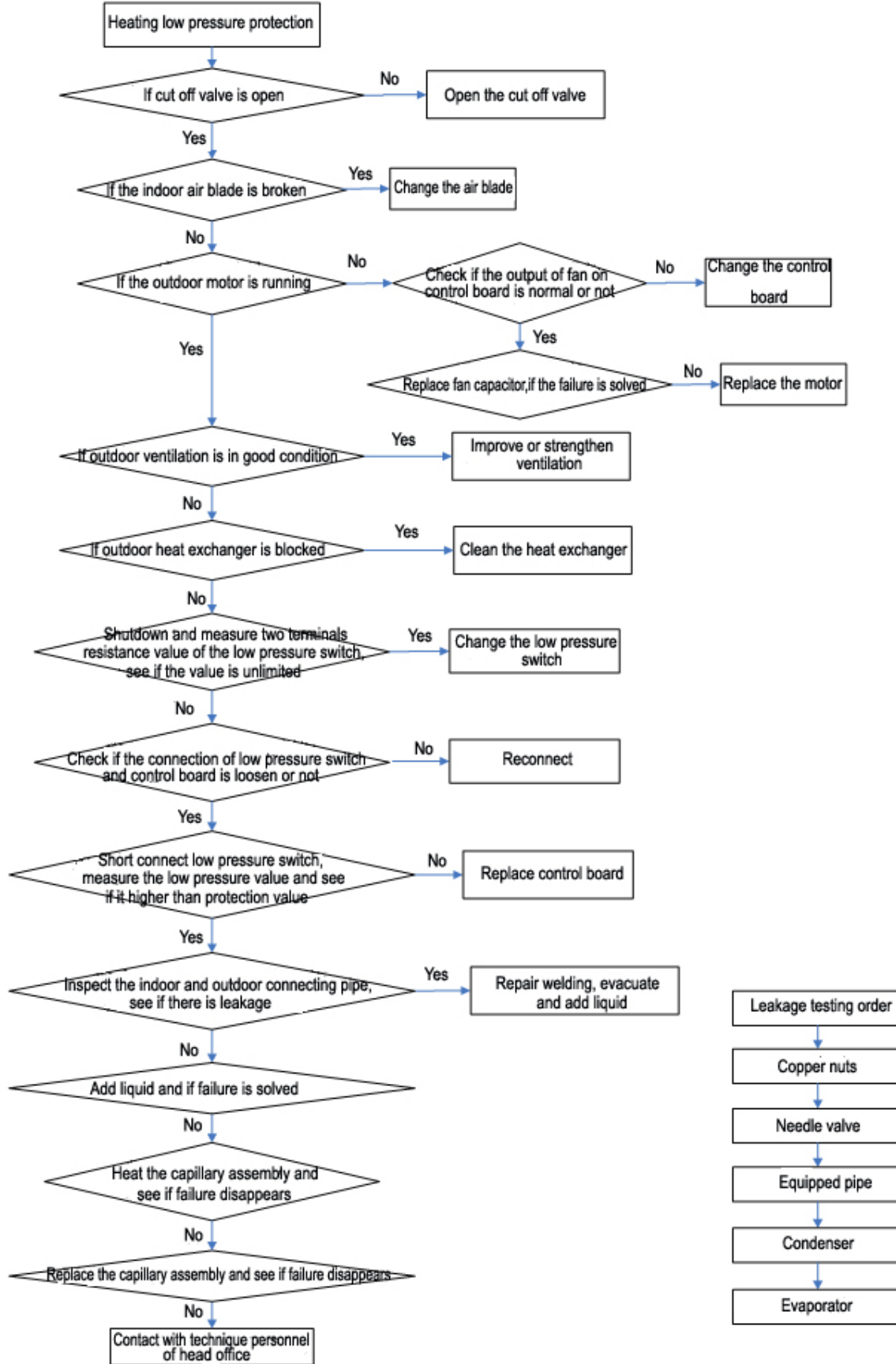
Heating high pressure protection



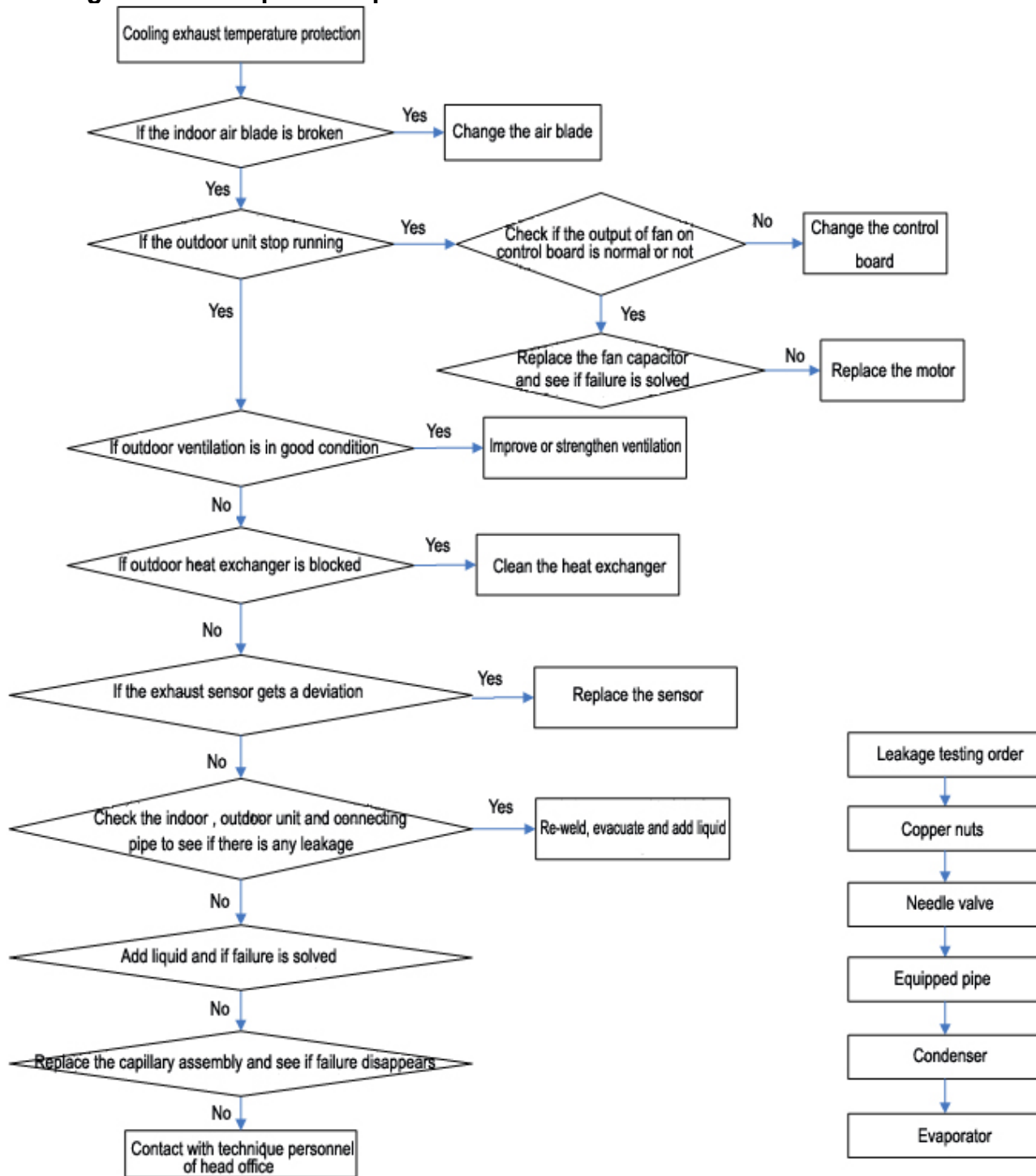
Cooling low pressure protection



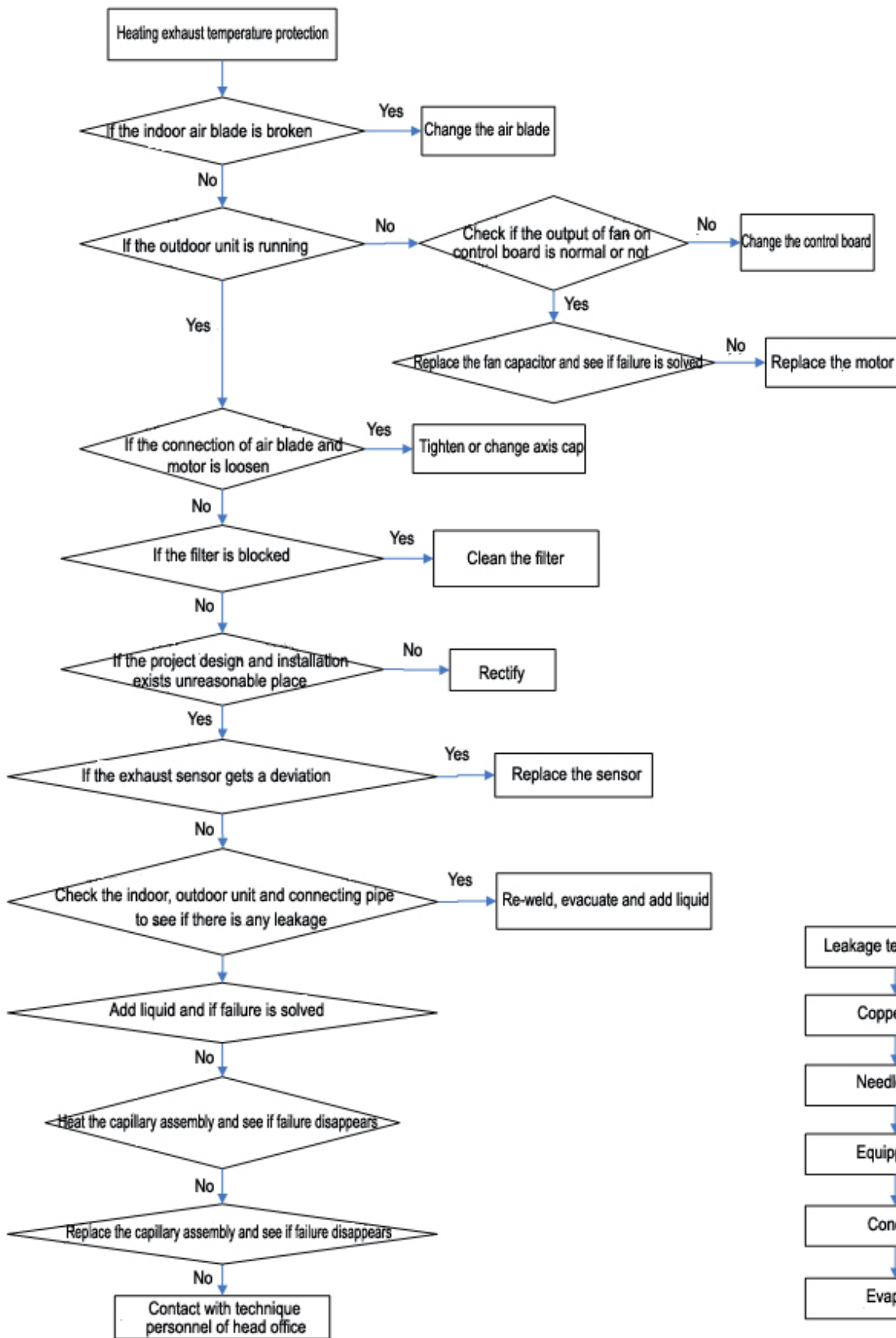
Heating low pressure protection



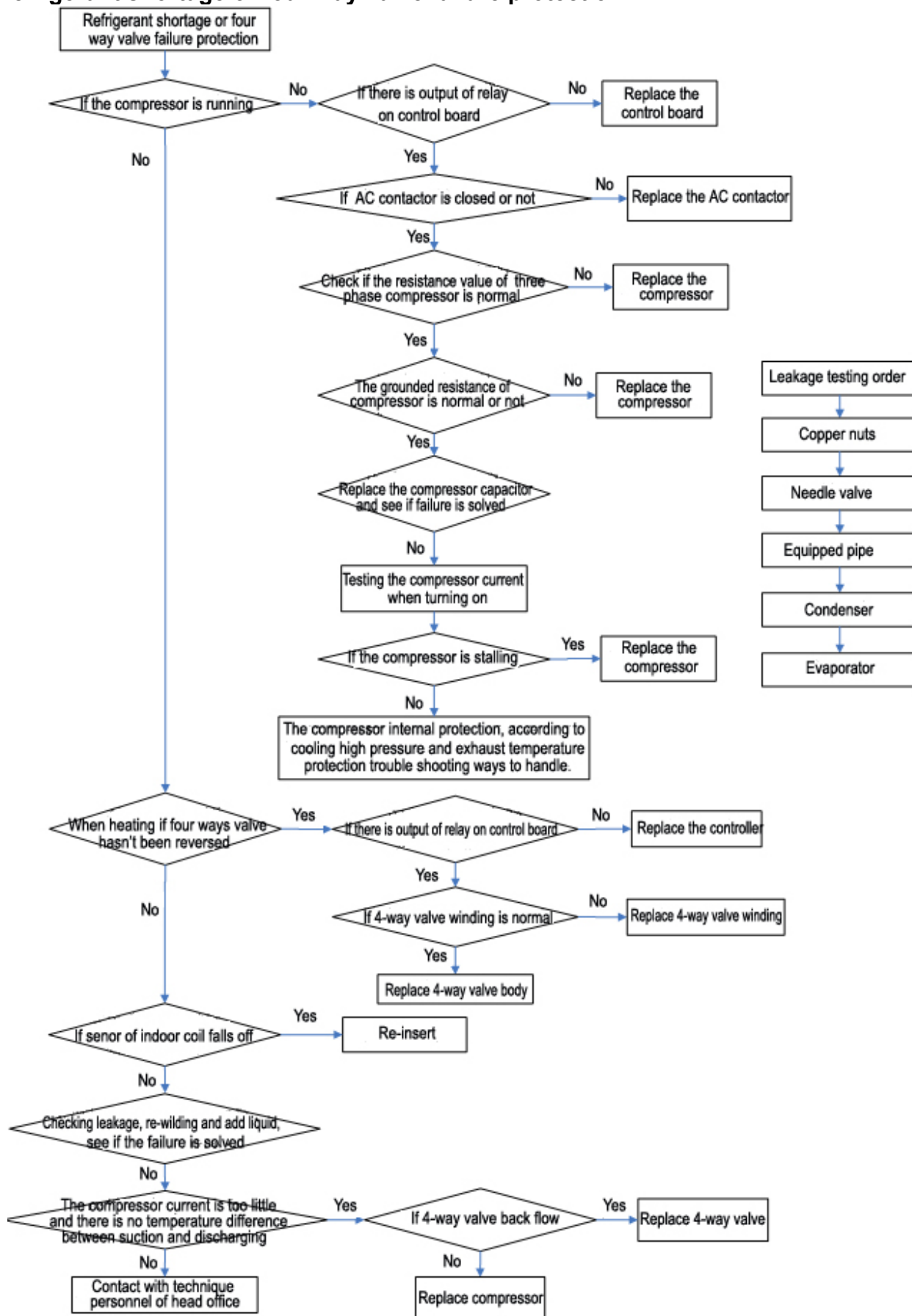
Cooling exhaust temperature protection



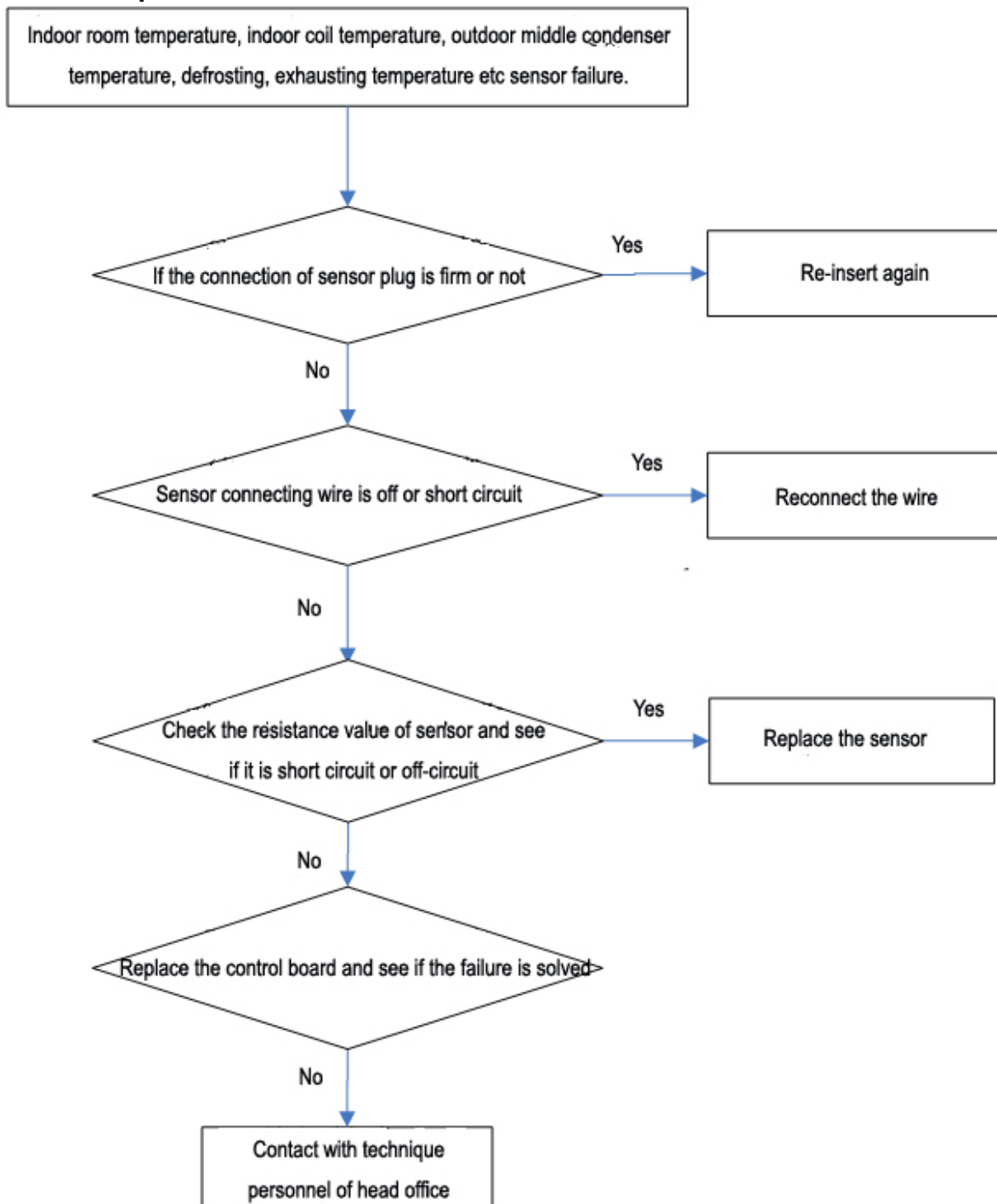
Heating exhaust temperature protection



Refrigerant shortage or four way valve failure protection

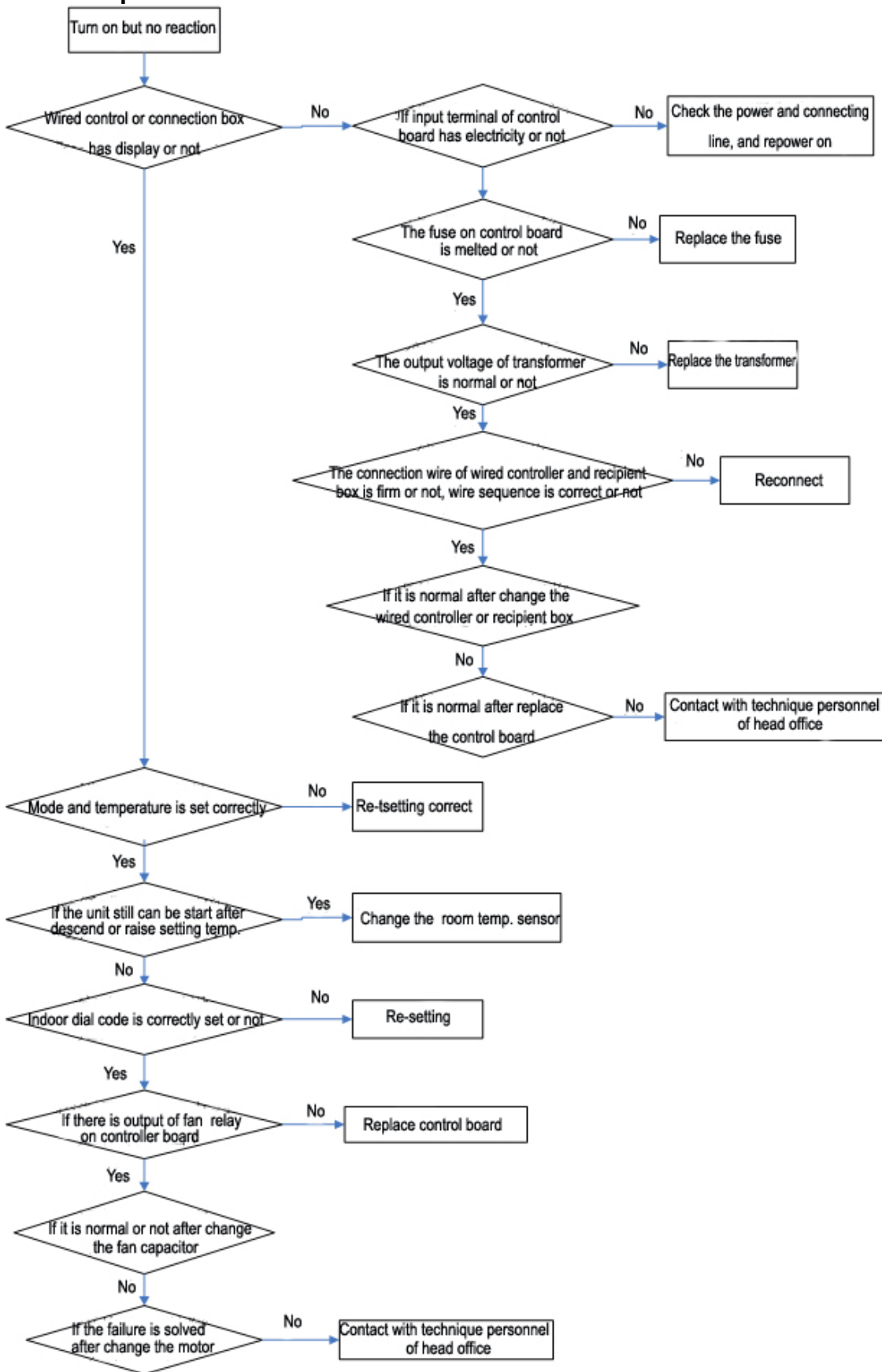


Sensor failure protection

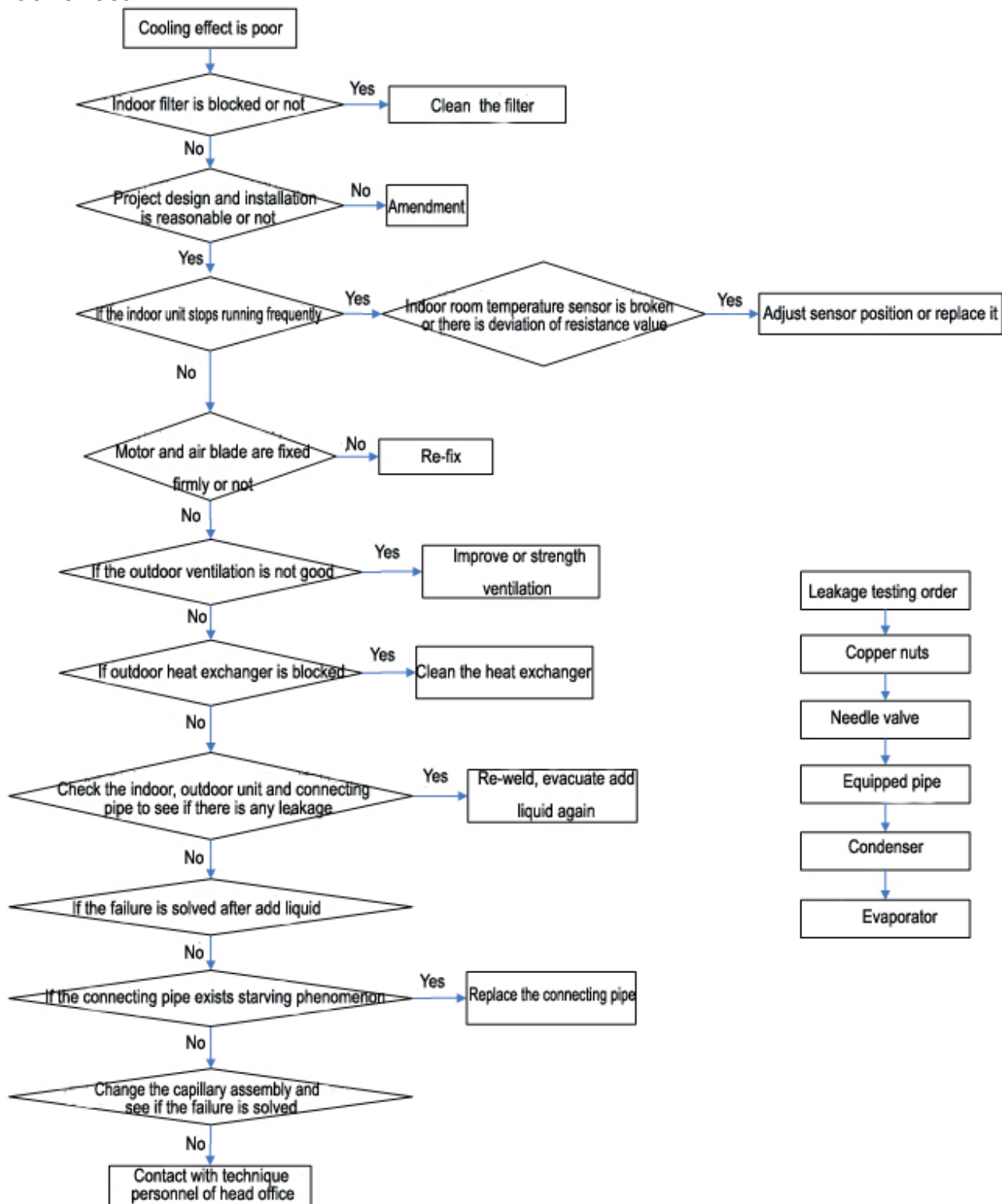


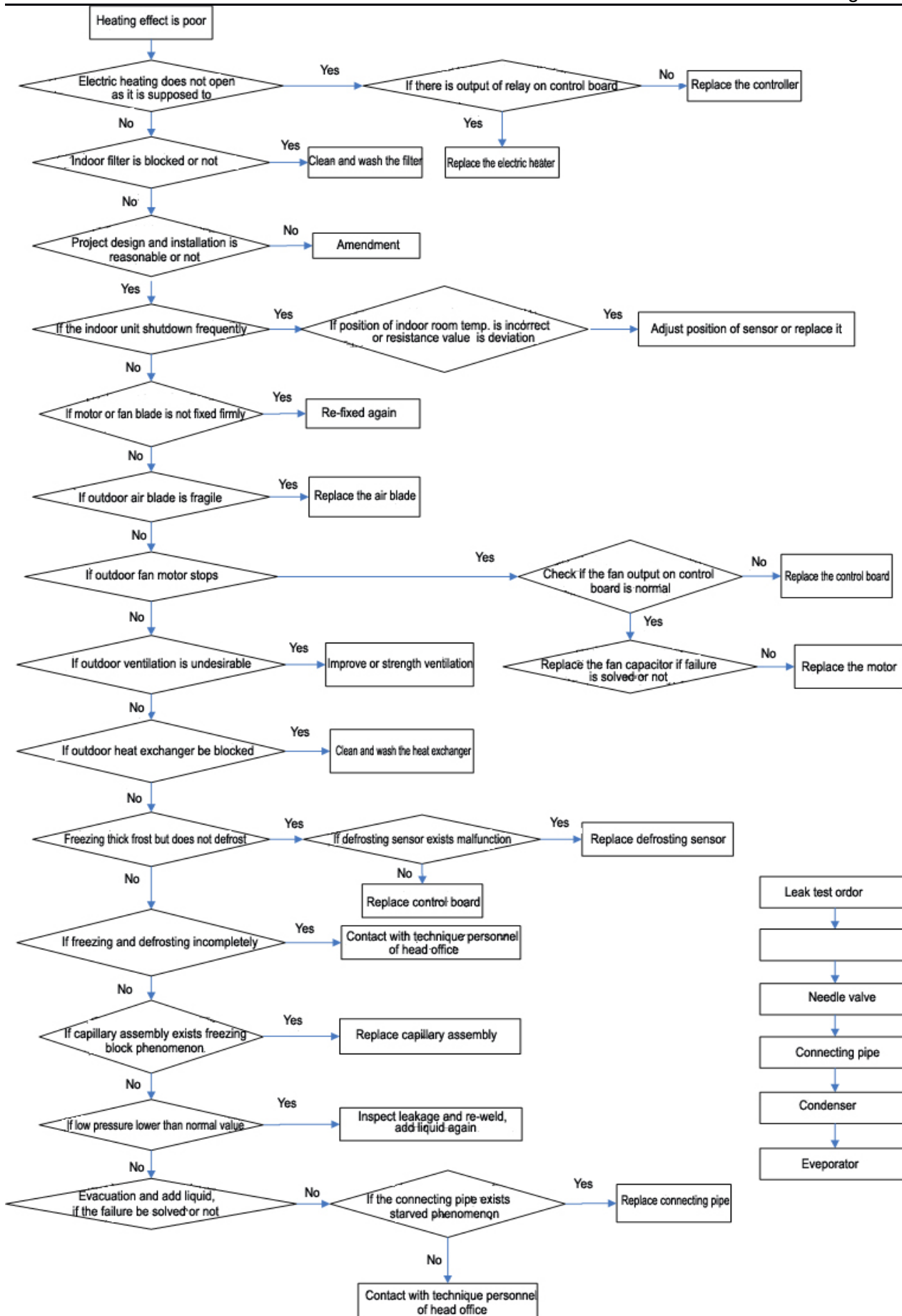
7.2 Anylisis and Solution for Failure without Failure Code

No action after power-on

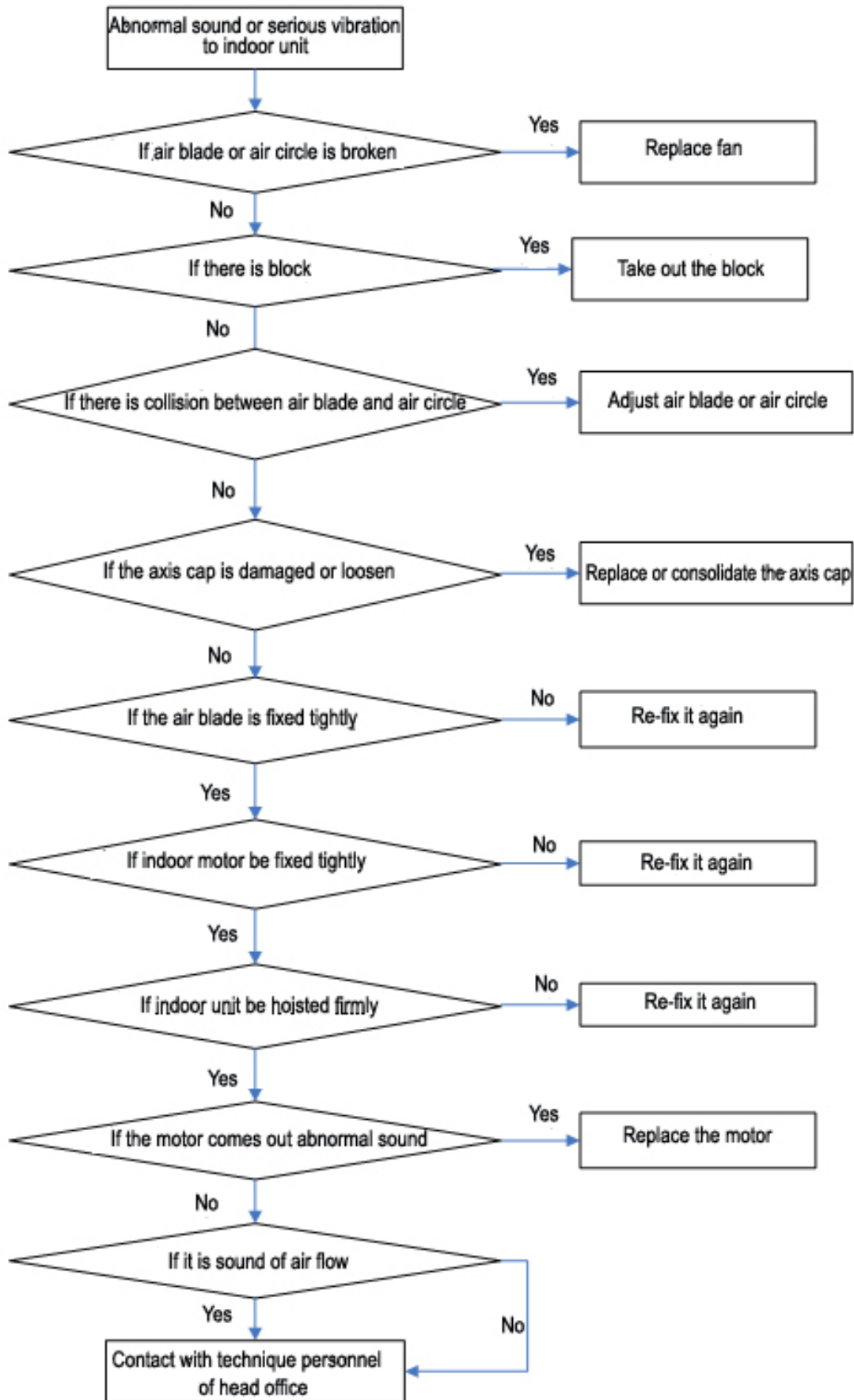


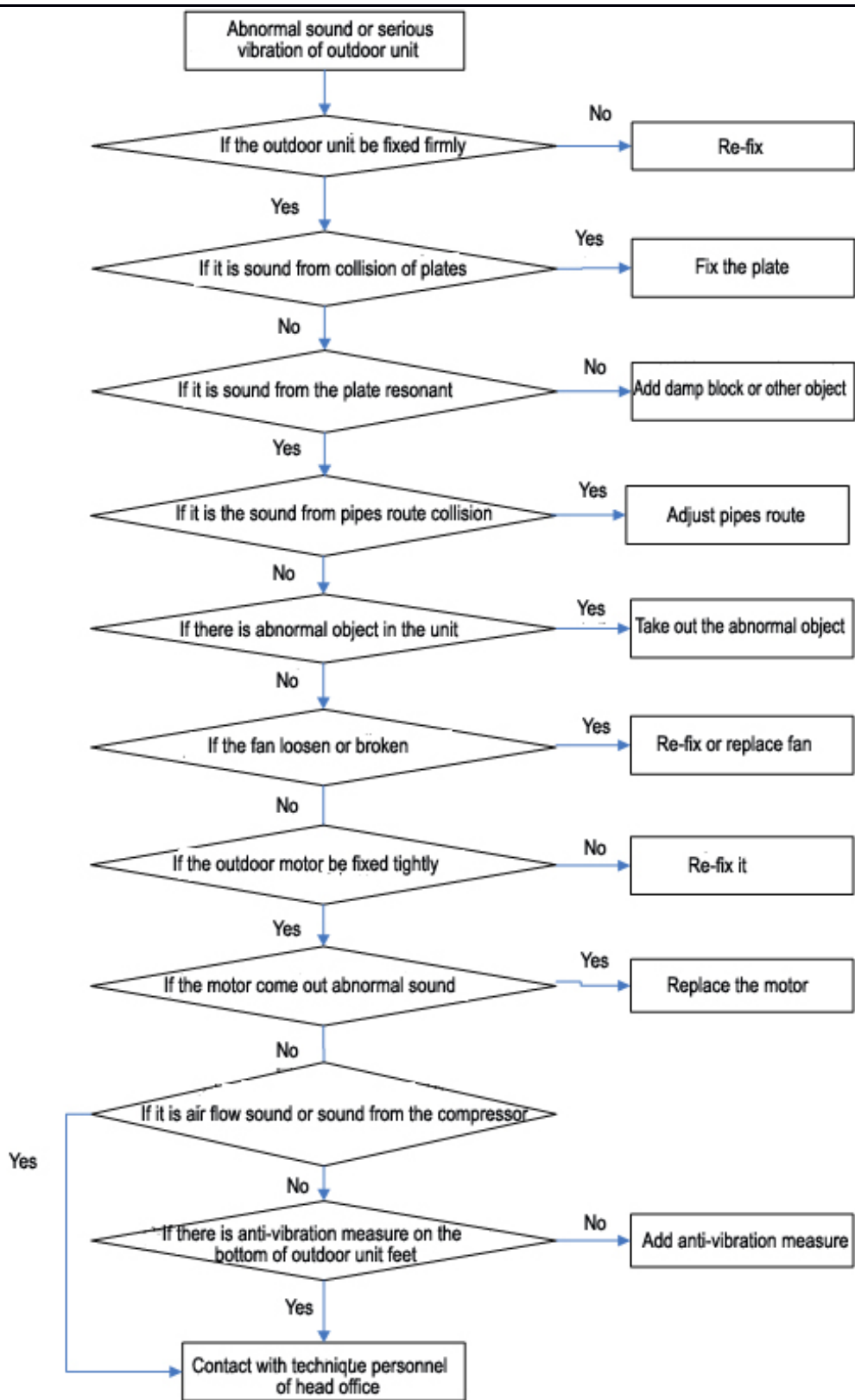
Poor effect

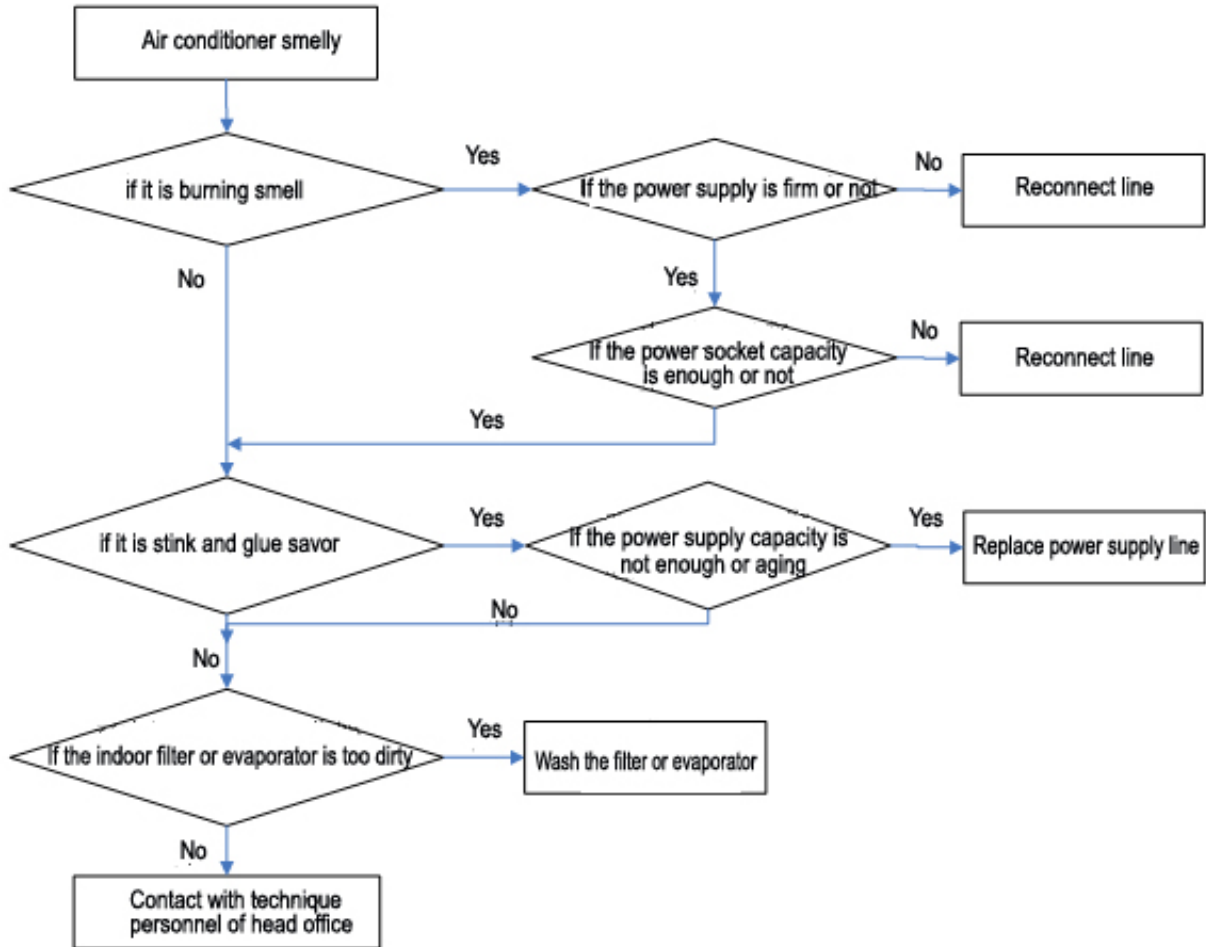




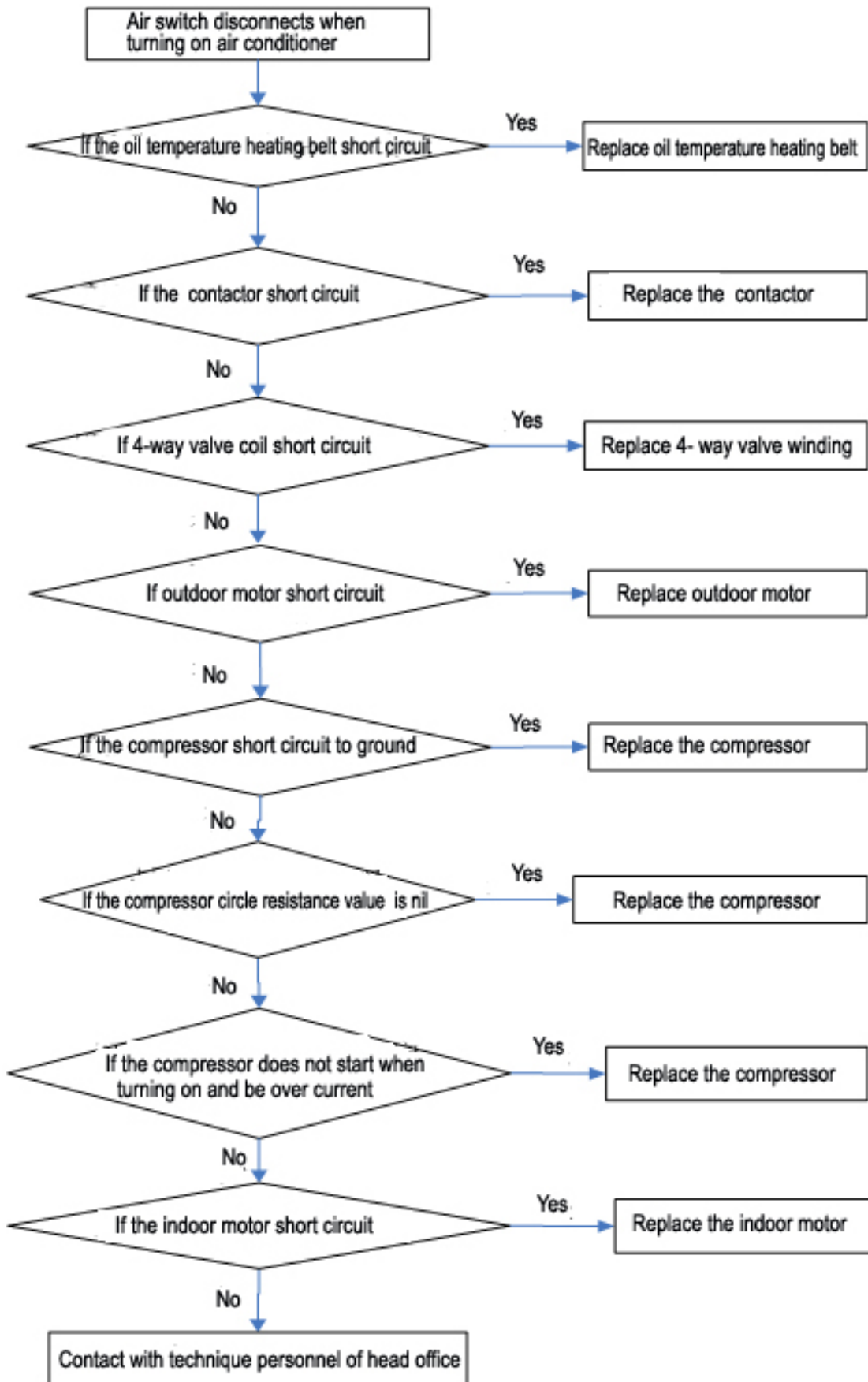
Abnormal sound or vibration



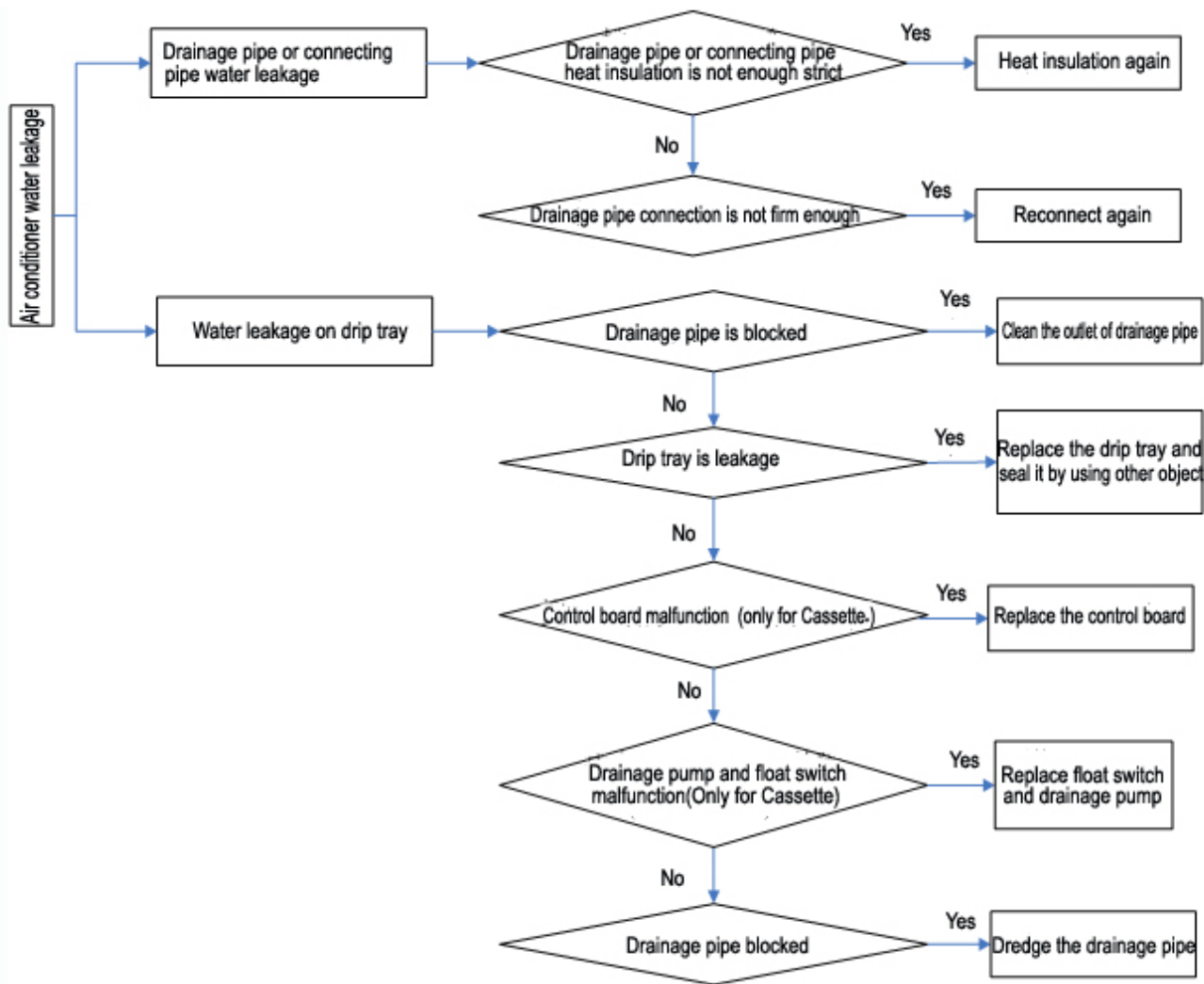


Abnormal odor

Air switch action when air conditioner starting up




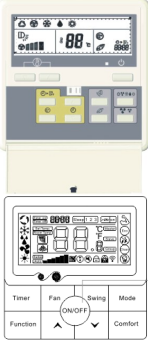


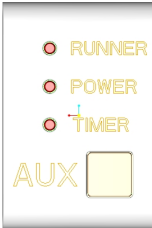
Air conditioner water leakage



Part 5 Controller


1. General information

Remote controller, wired controller, display panel and receiver

Remote controller, wired controller, display panel and receiver					
	Available for all models above	Available for all models above	Available for Cassette indoor unit	Available for Ceiling&Floor indoor unit	Available for Duct indoor unit
Note	For Cassette and Ceiling & Floor indoor unit, remote controller is standard and wired controller is optional. For Duct indoor unit wired controller is standard,remote controller is optional(remote controller receiver will be necessary).				

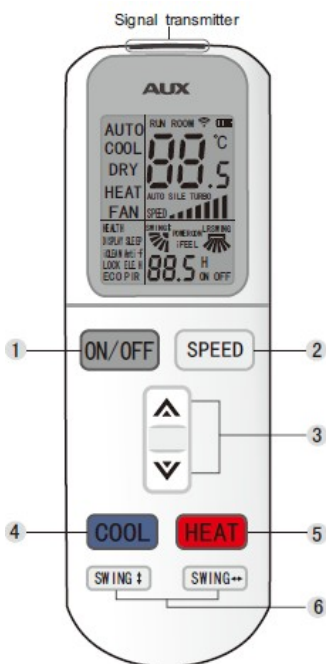
2. Remote Controller

2.1 Basic condition of remote controller

Name	Figure	Basic condition for operation
Remote controller		1. Power source Use 2 AAA batteries, working voltage: 2.0V-5.0V; 2. Signal frequency: infrared frequency 38kHz; 3. Remote distance: max working distance is 7m.
		Key operation introduction: 1. Temperature setting range 16°C-32°C; 2. when heating: When indoor coil temp. is lower than request, the fan will change into low speed,. After the temp. reach to the request temp., it will change into setting fan speed.

2.2 Function

Remote controller: L series



Note:

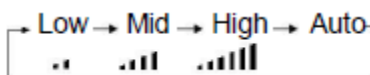
- Remote controller outside buttons only valid when surface cover is closed.
- Two white button is only for addressing set. If it has been set, remember not to reset by yourself.

1. “ON/OFF” button

*Press this button, the unit will start or stop, which can clear the timer or sleeping function of last time.

2. “SPEED” button

*Press this button, speed will change as below:



3. “▲/▼” button

*When press ▲ button, the setting temperature will be increased by 0.5°C. When press ▼ button, the setting temperature will be decreased by 0.5°C.

*The temperature will be changed quickly by pressing the button continuously and setting temperature range is 16°C to 32°C.

4. “COOL” button

*Press the COOL button, you can directly enter cooling mode.

5. "HEAT" button

* Press the **HEAT** button, you can directly enter heating mode.

Note: cooling-only unit has no heating function.

6. "SWING" button (SWING←→ and SWING↑↓)

* Press this button to start up/down(left/right) swing function, press it again, fix louver position.

* Up/down(left/right) setting is only valid in this mode; it will not affect louver position in other modes.

* Up/down (left/right) swing has memory function, it can keep primary setting when turn off then turn on or switch from other modes to primary mode.

7. "HEALTH" button

* Press this button; you can turn on or off the health function.

8. "SLEEP" button

* Press SLEEP button, the sleeping indicator light of indoor unit flashes on.

* The air-conditioner runs in sleeping mode for 10 hours and quiet sleep mode, recover back to former mode.

* The unit will turn off automatically if the timing mode is running out of time.

* Note: press the MODE or ON/OFF button, the remote controller clears sleeping mode away.

9. "iFEEL" button

* Press this button to set "iFEEL" function. The LCD shows the actual room temperature when the function set and it shows the setting temperature when the function cancelled.

* This function is invalid at Fan mode.

10. "DISPLAY" button

* In display mode, press button once, switch off "DISPLAY", Press "DISPLAY" again, LCD will show ambient & setting temperature after flashing 5s. It's convenient for users to check ambient or setting temperature at any time in darkness.

11. "iCLEAN" button

* This function is inactive of free match unit.

12. "ELE.H" button (for auxiliary electric heating IDU)

* In heating mode, press this button, auxiliary electric heating will work.

13. "Anti-FUNGUS" button

* This function is inactive of free match unit.

14. "SPOTSWING" button

* Press this button, the horizontal wind direction vanes can swing automatically, when you have the desired vertical wind direction.

* Press "SPOT SWING" again, the horizontal wind direction vanes will be stopped depend on you.

15. "ECO" button

* In cooling mode, press this button, the unit will run "ECO" economic operation mode which takes the least power consumption.

* After running for 8h, it will automatically quit. You can press "ECO" button once again to quit.

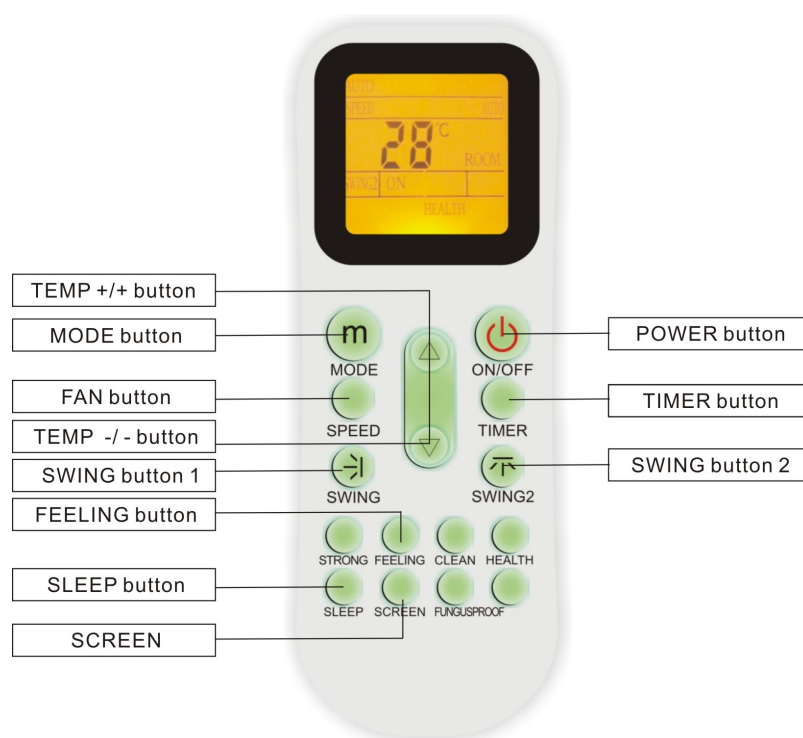
* Note: The unit will turn off automatically if the timing mode is running out of time.

16. Two white button: Addressing set





* With the controller off, pressing the two white button simultaneously more than 10 seconds or more to enter address setting. This status displays only temperature and time parameters, temperature display are a show "Serial number" parameters, the range is 0-99. Time display area show "Set value", the range is 0-255. The initial value is 1.

* By pressing "▲/▼" to set serial number + and -. Parameter within the serial number displays from 0 to 99 in circulation.

* By pressing "ECO" and "iCLEAN" to set value number + and -. Parameters within the value number displays from 0 to 255 in circulation. After setting the two numbers, press the MODE button to confirm sending to ODU.

Standard remote controller: K series

POWER button: Switch the unit ON/OFF.

MODE button: Select mode , press the button one time, then the operation modes will change in turn as Auto-Cooling-Dehumidify-Heating  →  →  → 

TEMP + button and TEMP - button: Temperature adjustment range: 16~32

FAN button: Change the fan speed, press the button one time then the fan speed will change in turn as: Low-Medium-High-Auto

SWING button 1: Press this button for the first time when operation, it will start the up and down swing function. Press the button for the second time, cancel the swing function.

SWING button 2: Press this button for the first time when operation, it will start the right and left swing function. Press the button for the second time, cancel the swing function.

Feeling button: Press this button for setting the feeling function. The LCD shows the actual room temperature when the function is set and it shows the setting temperature when the function is cancelled. The function is invalid in the fan mode.

TIMER/CLOCK button:

Clock Setting: Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When press the button for 5 seconds, the time display zone will flicker, then press **【+】** and **【-】** button to adjust hour that uses 12-hour clock including “A.M.” and “P.M.” time; press the button again to complete the setting.

Timer setting: Press the button to set TIMER ON/OFF , press the button then “ON” will flicker on the display screen. then press **【+】** and **【-】** button to adjust timing time; press the button again to complete the setting. The “OFF” setting is the same methods.

Remark: When setting functions such as mode, temperature, fan speed, display screen displays all presetting parameters and remains constant; after reaching presetting time, air conditioner will automatically start as per presetting state.

After setting timing ON and OFF function, pressing button of **【Timer/Clock】** can cancel timing setting.

SLEEP button:

1. Press the button to the sleeping indicator light of indoor unit flashes on;
 2. In sleeping mode, the cooling operation enables the set temperature to increase 1°C after 1 hour and another 1°C automatically after 1 hour.
 3. In sleeping mode, the heating operation enables the set temperature to drop 2°C after 1 hour and another 2°C automatically after 1 hour.
- The air conditioner will cancel sleeping mode automatically after running in this mode for 7 hours.

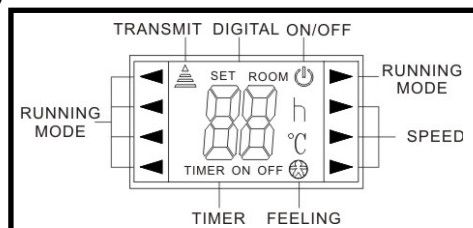
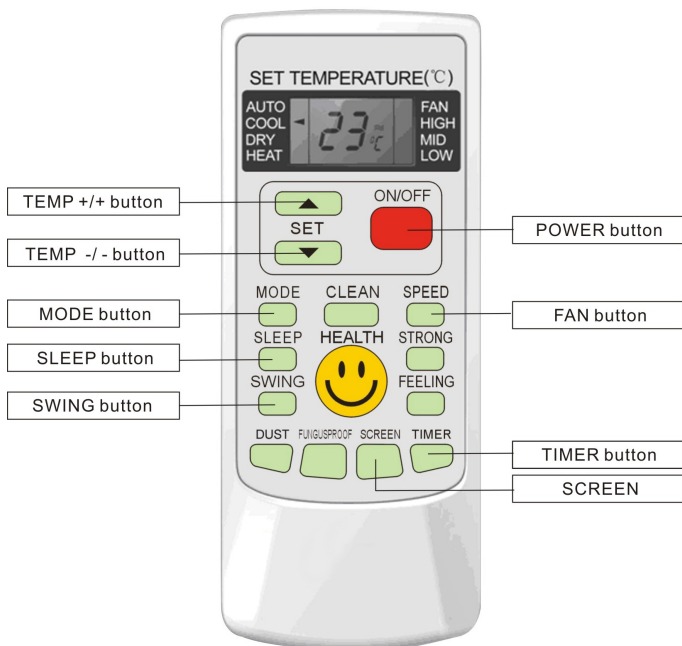
4. Remark:

Press the mode or ON/OFF button, the remote controller will cancel sleeping mode.

SCREEN button: Press the button to let the LCD display working or not.

Remote controller: H series

LCD display instruction



NOTE :
ON/OFF display:
 when the remote controller is on the state, the LCD will be display or not.
Digital display:
 Under normal working state, it displays setting temperature. While the feeling function is start, it will display room temperature, and under the state of timer mode, it will display setting timer.

NOTE:
Fan speed operation
 When the air volume is greater, the Noise will be higher, The wind temperature will rise when cooling mode, and drop when heating mode; Please select the appropriate Fan speed, to achieve the more comfortable rest environment.

POWER button: Switch the unit ON/OFF.

MODE button: Select mode , push the button one time, then the Auto-Cooling-Dehumidify-Heating → ❄️ → ❄️ → ❄️ → ❄️

TEMP + button and TEMP - button: Temperature adjustment range: 16~32

FAN button: Change the fan speed will change in turn as: Low-Medium-High-Auto

SWING button: Press this button for the first time when operation, it will start the swing function. Push the button for the second time, cancel the swing function. (The function is available matched with the concerned unit)

TIMER/CLOCK button:

Clock Setting: Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When press the button for 5 seconds, the time display zone will flicker, then press 【+】 and 【-】 button and to adjust hour that uses 12-hour clock including “A.M.” and “P.M.” time; press the button again to complete the setting.

Timer setting: Press the button to set TIMER ON/OFF , press the button then “ON” will flicker on the display screen. then press 【+】 and 【-】 button and to adjust hour that uses 12-hour clock including “A.M.” and “P.M.” time; press the button again to complete the setting. The “OFF” setting is the same methods.

Remark: When setting functions such as mode, temperature, air port and air velocity, display screen displays all presetting parameters and remains constant; after reaching presetting time, air conditioner will automatically start as per presetting state.

After setting timing ON and OFF function, pressing button of 【Timer/Clock】 can cancel timing setting.

SLEEP button:

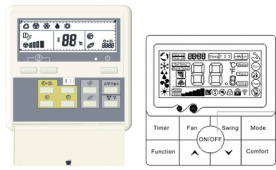
1. Press the button to the sleeping indicator light of indoor unit flashes on;
2. After the setting of sleeping mode, the cooling operation enables the set temperature to increase 1°C after 1 hour and another 1°C automatically after 1 hour.
3. After the setting of sleeping mode, the heating operation enables the set temperature to drop 2°C after 1 hour and another 2°C automatically after 1 hour.
4. The air condition runs in sleeping mode for 7 hours and stops automatically.

Remark: Press the mode or ON/OFF button, the remote controller clears sleeping mode away.

SCREEN button: Press the button to let the LCD display working or not by pressing the button.

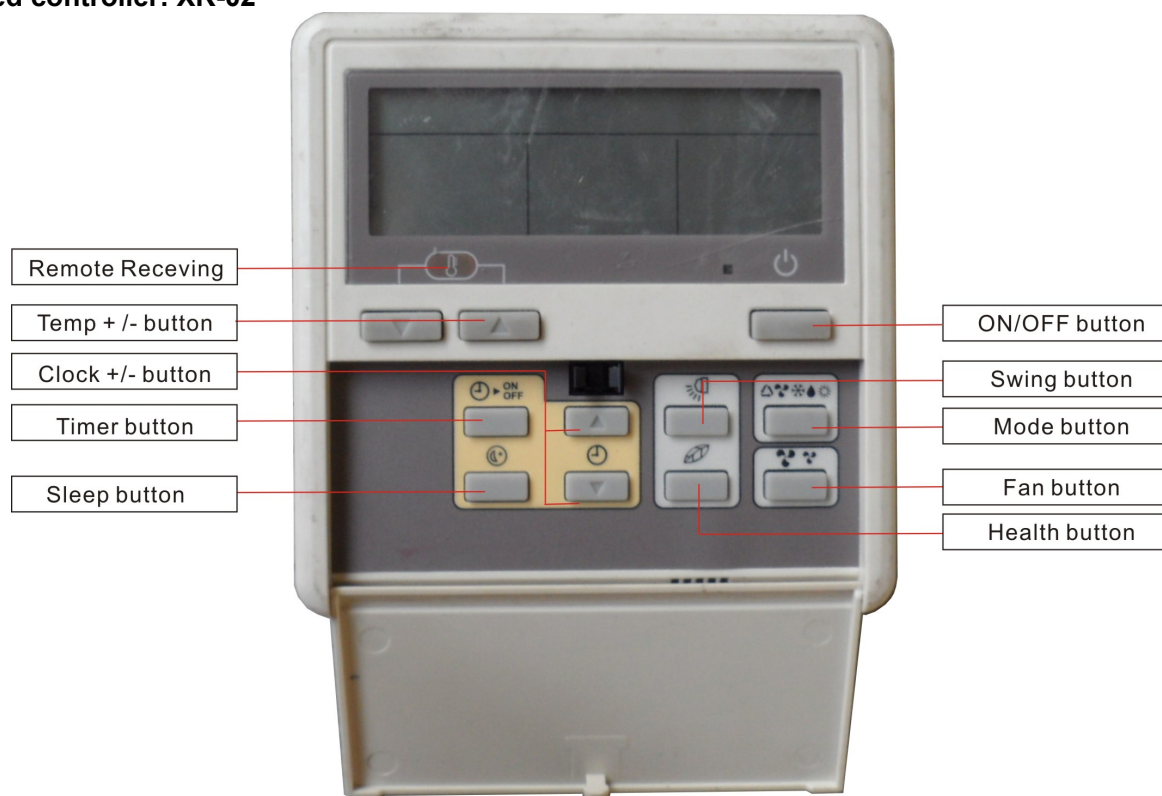
3. Wired controller

3.1 Basic condition of wired controller





Name	Figure	Basic condition for operation
Wired controller		<ol style="list-style-type: none"> 1. Power source:voltage DC 12V; 2. Work temperature range of PCB:(-10~+70)°C; 3. Work humidity range of PCB:RH20%~RH90%;

3.2 Function

Wired controller: XK-02



ON/OFF button:Switch the unit ON/OFF.

Mode button:Select mode , press the button one time, then the operation modes will change in turn as below: Auto-Cooling-Dehumidify-Heating  →  →  → 

Temp +/- button: Press the button can adjust temperature.

Fan button: Change the fan speed in turn as :Auto-Low-Medium-High-Auto

Swing button: Press this button for the first time when operationwill start the swing function. Press the button for the second time will cancel the swing function. (The function is available matched with the concerned unit)

Health button: Press this button to enter health mode.

SLEEP button:

1. Press the button then the sleeping indicator light of indoor unit will flash on;

2. In sleeping mode, the cooling operation enables the set temperature to increase 1°C after 1 hour and another 1°C automatically after 1 hour.
 3. In sleeping mode, the heating operation enables the set temperature to drop 2°C after 1 hour and another 2°C automatically after 1 hour.
 4. The air conditioner runs in sleeping mode for 7 hours and then cancel sleeping mode automatically.
- Remark:** Press the mode or ON/OFF button can cancel sleeping mode.

Timer button: Press the button to set Timer ON/OFF, press the button then “ON” will flicker on the display screen. then press 【Clock +/- button】 and to adjust timing time; press the button again to complete the setting. The “OFF” setting is the same methods.

Remark: When setting functions such as mode, temperature, swing and fan speed, display screen displays all presetting parameters and remains constant; after reaching presetting time, air conditioner will automatically start as per presetting state.

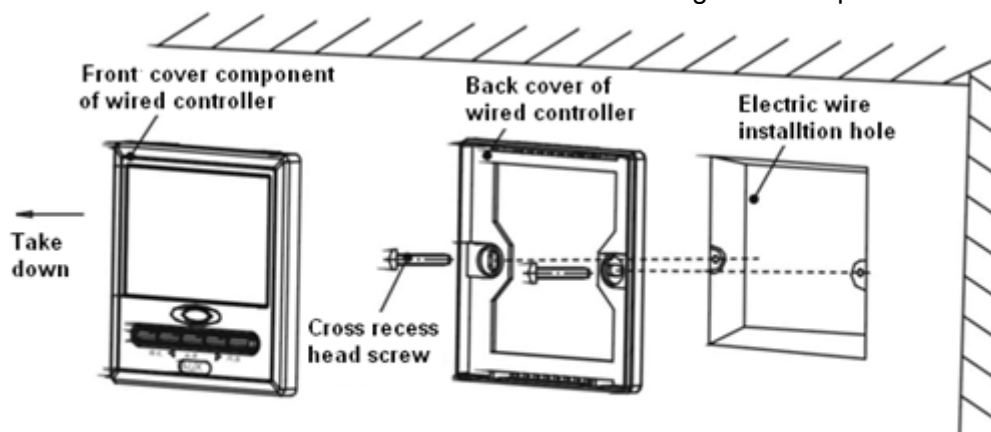
After setting timing ON and OFF function, pressing button of 【Timer】 can cancel timing setting.

Notes:

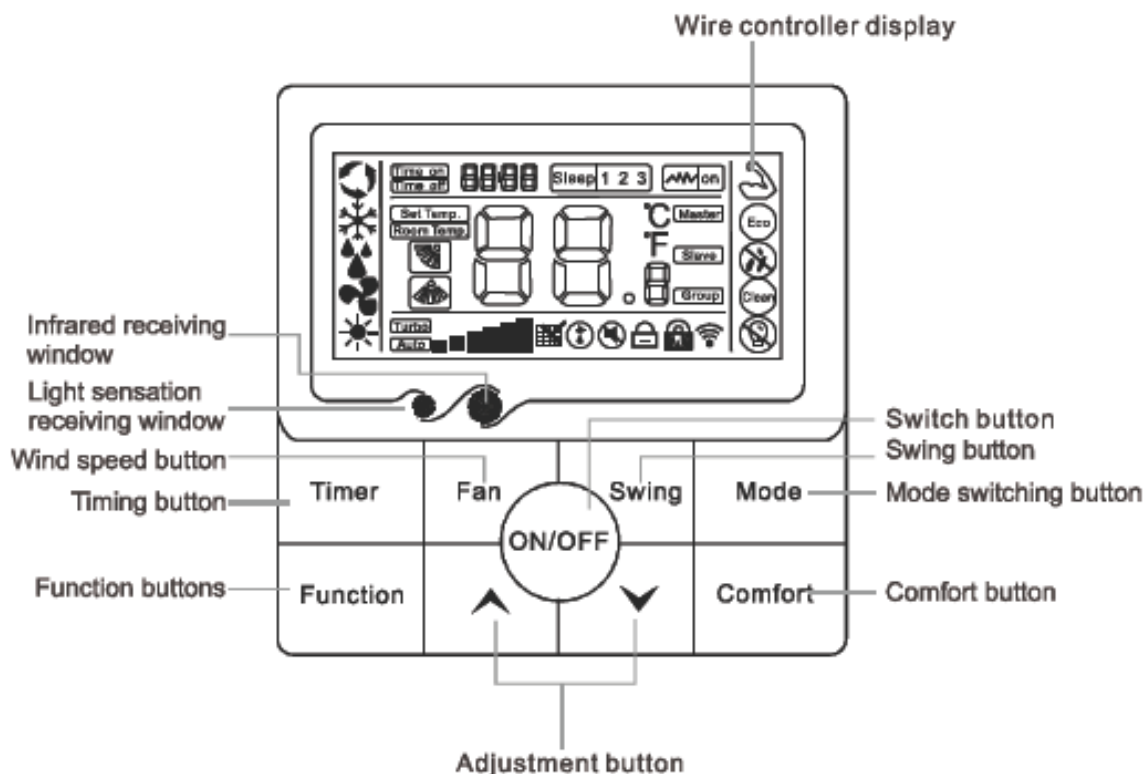
1. Time sequence of timing ON and OFF determines the order of “Timing ON-Timer OFF” and “Timer OFF- Timing ON”. If the both are the same or either one is the same as time of current clock, it is invalid to press “Timer” button to confirm presetting time; after it reaches the presetting time, it will implement corresponding timing operation.
2. After setting time of timing ON and OFF, pressing “Timer” button can cancel timing.
3. Enter into time setting state of timing function; if there is no input related to time within consecutive 10 seconds, cancel the operation, return to previous state and go on with current time.
4. Default time of timer ON is 08:00 and default time of timer OFF is 18:00.

3.3 Installation of wired controller

- ◇First, take apart the base panel from the wired controller.;
- ◇According to the two installation holes on the install board, use two screws to fix the base panel to the wall as shown below;
- ◇Ensure that the connecting cable of the controller is accessible before connecting the wired controller to the base panel.;
- ◇Join the wired controller connection cable to the indoor unit using the cable provided.



Wired controller: XK-04



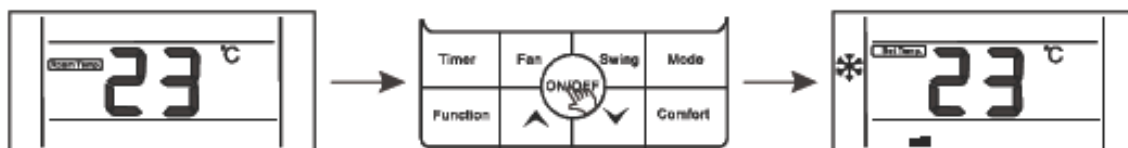
Note: The product adopts touch buttons. To ensure the validity of operation, please touch the center of each icon.

Detailed operation instructions

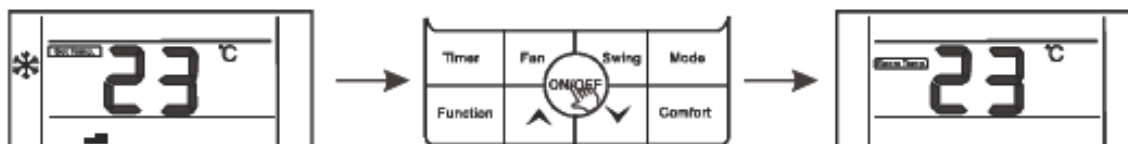
• **ON/OFF button**

Press- "ON / OFF" button to start or shutdown the unit.

1. When the unit is running, users can regulate the operation mode, fan speed, setting temperature, special functions and other parameters on the wired controller.

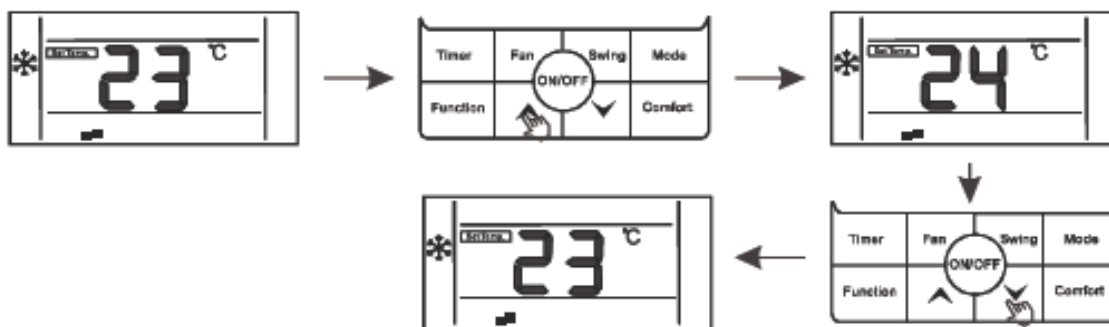


2. When the unit is standby, the wire controller displays indoor ambient temperature (Room temp.), the other content are not displayed.



• **▲ / ▼ button**—Temperature, time setting, function selection.

1. When the unit is running, press "▲" or "▼" button to increase or decrease the setting temperature by 1°C.



Under COOL, DRY, and HEAT modes, the setting temperature range is 16 °C ~ 32 °C;

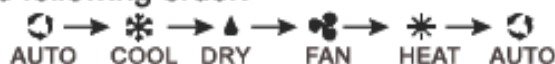
The controller will display "Set temp." to show the setting temperature;

2. Under the function selection mode, press " ^ " or " v " button to select a function;

3. Under the timing mode, press " ^ " or " v " button to setting time.

• Mode setting

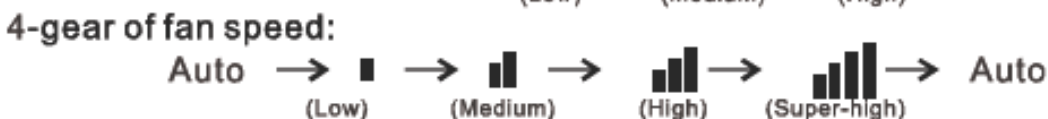
When the unit is running, press "MODE" button, the running mode will switch according to the following order:



The initial setting temperature for each mode is 24 ° C, and there is no temperature setting and automatic wind under FAN mode.

• The setting of "Wind speed"

When the unit is running, press "Fan" button to switch fan speed in the following order:



In turbo mode, display fan speed (turbo + highest fan speed icon).

• The setting of "Swing"

1. For the unit only has the function of up and down swing:

when the unit is running, press "Swing" button to enter or cancel up and down swing. At the time of opening up and down swing, " [Swing Icon] " is lighting. At the time of closed, swing icon will disappear. If the unit has positioning swing function, press "Swing" button to regulate the swing angle in the order:

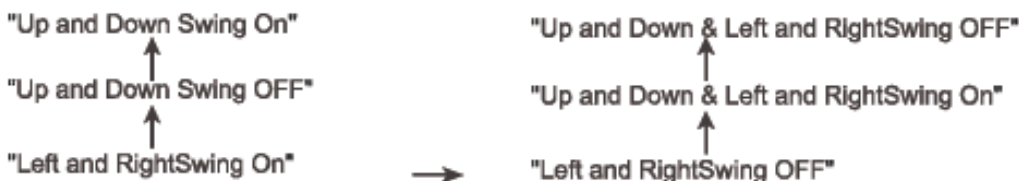


2. For the unit only has the function of left and right swing:

when the unit is running, press "Swing" button to enter or cancel left and right swing. At the time of opening left and right swing, " [Swing Icon] " is lighting. At the time of closed, swing icon will disappear. If the unit has positioning swing function, press "Swing" button to regulate the swing angle in the order:



3. For the unit has the functions of left and right swing and up and down swing: Press "Swing" button, the swing mode will switch in the following cycle order:



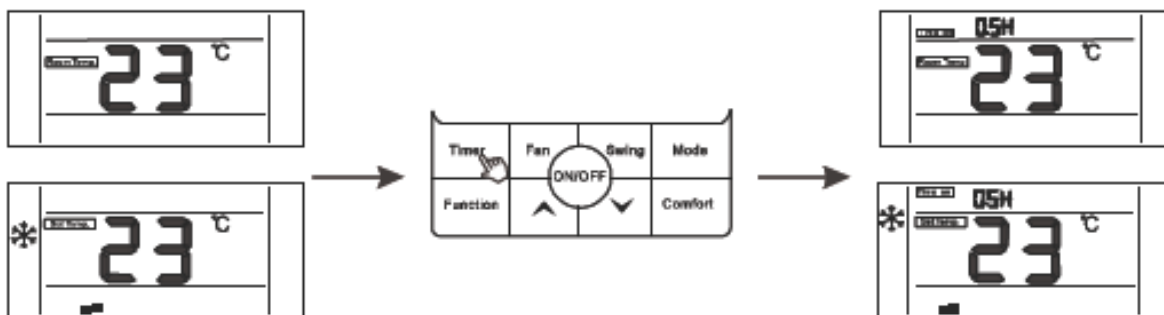
• **The setting of "Comfort"**

1. When the unit is running, press "Comfort" button to enter comfort function. The default setting temperature of COOL and DRY mode is 26 °C, HEAT mode 24 °C, setting temperature is adjustable. Fan speed is automatic and adjustable. The comfort function will be canceled if the running mode is changed.
2. Press "Comfort" button again to cancel comfort function.

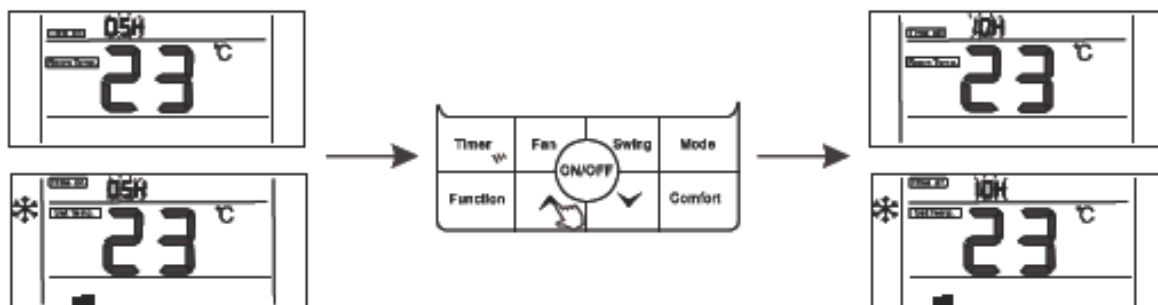
• **"Timing" function**

Users can set shutdown timing time when the unit is running, and set starting-up timing time when the unit is standby.

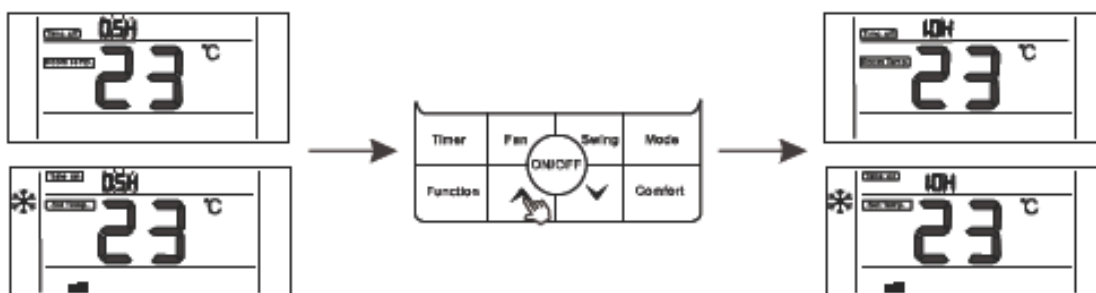
1. Press "Timer" button when the unit is running, the wired controller will display "Time off" and users can set the shutdown timing time; when the unit is standby, the wired controller will display "Time on", and users can set the starting-up timing time.



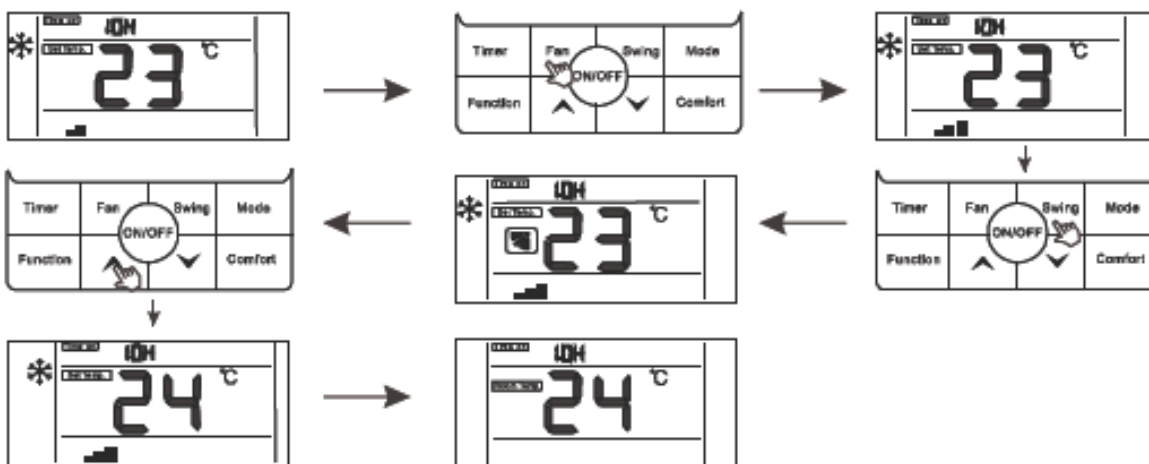
2. After entering timing time setting interface, the default timing time is 0.5H, at this moment, press "▲" or "▼" button to regulate the timing time. If the button is not pressed for 10 seconds, the timing setting will be canceled, and then return to the state of non-timing.



3. After the setting of timing, press "Timer" button again to confirm. The timing setting is successful and the time bar will stop blinking.



4. After the setting "Timer On" function, you can adjust the fan speed, running mode, set temperature, and swing angle. If there is no operation for 10 seconds, standby screen will be displayed.



5. Timing range: 0.5~24 hours.

press " ^ " or " v " button once, the timing time will increase or decrease by 0.5 hours. When the timing time is more than 10 hours, press " ^ " or " v " button once, the timing time will increase or decrease by 1 hour.

6. Press "Timer" button or "ON / OFF" button to exit TimerON or TimerOFF.

Function description

The wire controller is for the general-purpose, specific functions for the controller are subject to the functions of your air conditioning unit.

Note: In the interface of function setting, press any button such as Timer, Fan, Swing, Mode, ON/OFF, and Comfort to exit the interface and conventional operation interface will display. If there is no operation for 10S, you can exit the interface.



Enter function: Press function button to enter function selection interface, press " ^ " or " v " to select a function, and the corresponding icon will flash, press "function" button again to confirm the function.

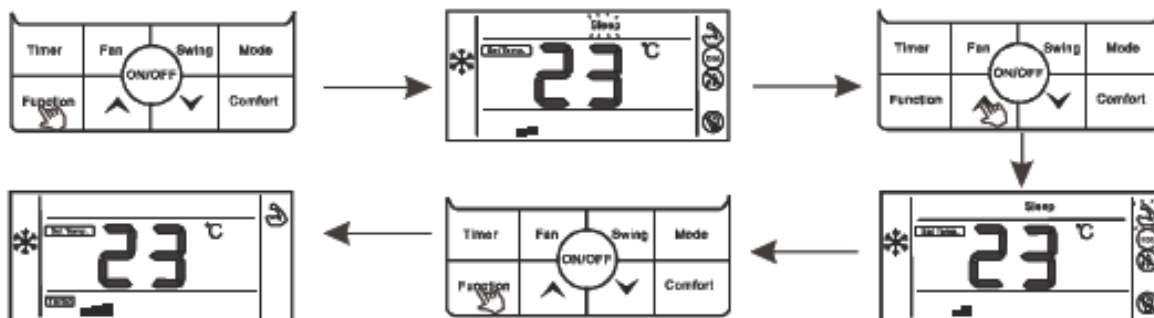
Cancel function: Press function button to enter function selection interface, press " ^ " or " v " to select a function and the corresponding icon will flash, press "function" button again to cancel the function.

• The setting of "Turbo" function


Turbo function: The fan speed will be ultra-high in turbo mode and users can achieve rapid cooling or heating effect.

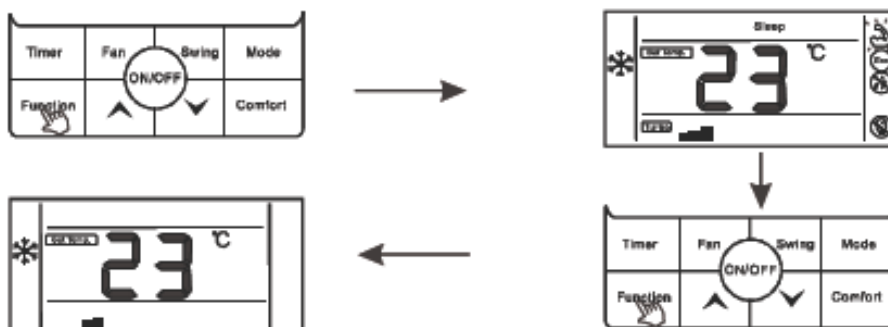
Open turbo function:


1. When the unit is running in cooling or heating mode, press "Function" key to enter the interface of function selection.
2. Press " ^ " or " v " button to switch to turbo function, at this moment, "  " icon is flashing.
3. Press " Function " button to confirm turbo function, at this moment, icon "  ", fan speed display is (Turbo and speed speed icons).



Cancel turbo function:

1. When turbo function is opened, press "Function" button to enter the interface of function selection.
2. Press " ^ " or " v " switch to strong function, at this moment, icon "  " is flashing, press "Function" button to cancel strong function, and strong icon would not display.



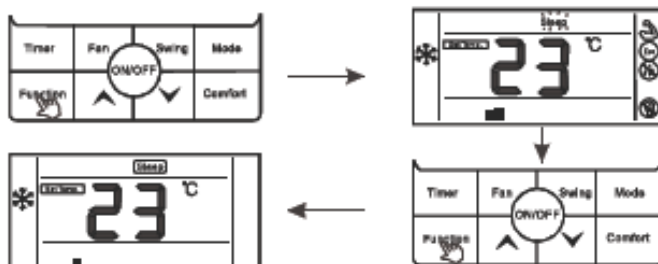
Note: The unit without turbo function can also set turbo function on the wired controller, the performance is high fan speed, but "  " icon and " Turbo " icon do will not display.

• The setting of "Sleep" function

Sleep function: Make indoor unit will run according to pre-set sleep temperature curve, which creates a comfortable sleep environment and improves sleep quality.

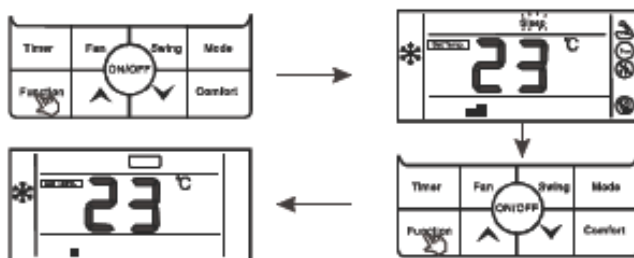
Enter sleep function:

1. In the state of running, press "Function" button to enter the interface of function selection.
2. Press " ^ " or " v " button to switch to sleep function, " Sleep " icon is flashing at this moment
3. Press " Function " button to open sleep function, at this moment, icon Sleep is lighting.



Cancel "sleep" function:

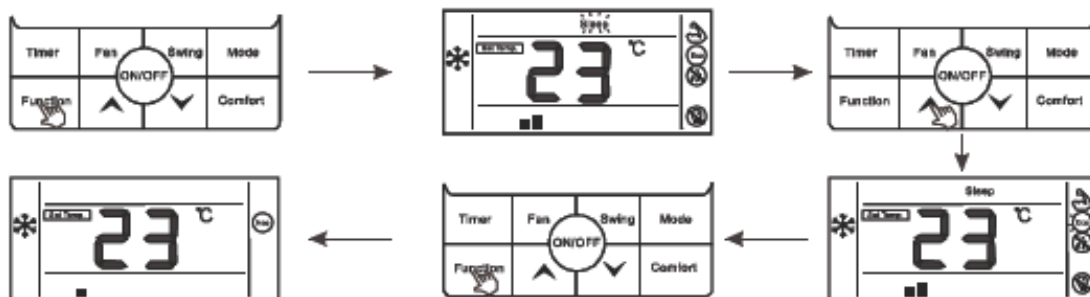
1. When sleep function is opened, press "Function" button to enter the interface of function selection.
2. Press " ^ " or " v " button to switch to sleep function, [Sleep] icon is flashing.
3. Press "Function" button again to cancel sleep function.



• The setting of "ECO" function

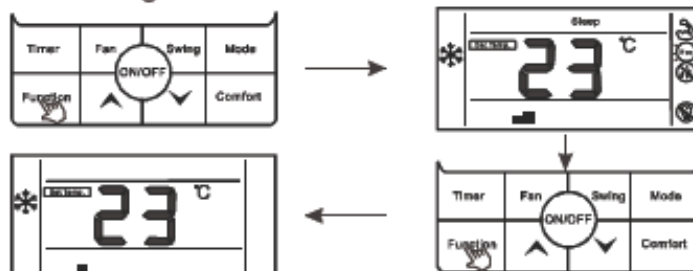
Enter ECO function:

1. Press "Function" button to enter the interface of function selection.
2. Press " ^ " or " v " button to switch to ECO function, at this moment, " Eco " icon is flashing;
3. Press "Function" button again to confirm ECO function, at this moment, icon " Eco " is lighting.



Cancel ECO function:

1. Press "Function" button to enter the interface of function selection.
2. Press " ^ " or " v " button to switch to ECO function, at this moment, " Eco " icon is flashing;
3. Press "Function" button again to cancel ECO function.

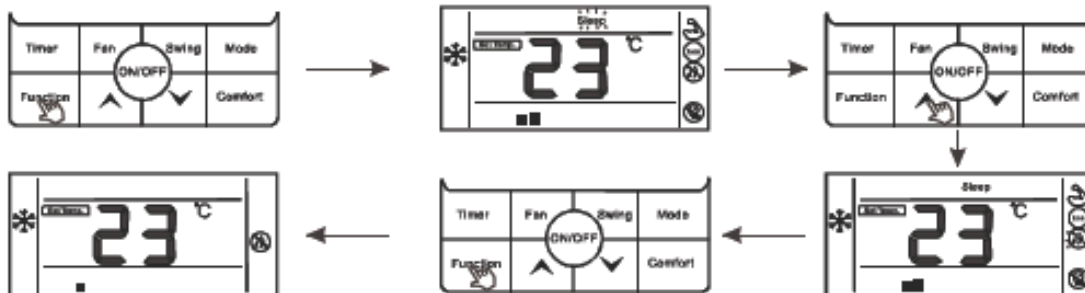


• **The setting of "Mildew-proof" function**

Mildew-proof function: After shutdown, the air conditioner would automatically dry the moisture in the evaporator of indoor unit, so as to avoid mildewing.

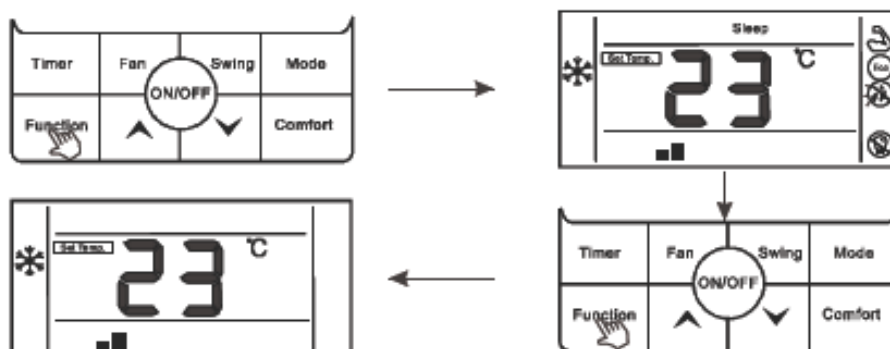
Enter mildew-proof function:

1. Under COOL and DRY mode, press "Function" button to enter the interface of function selection.
2. Press "▲" or "▼" button to switch to the mildew-proof function setting interface, at this moment, icon "☼" is flashing;
3. Press "Function" button again to enter mildew-proof function, icon "☼" is lighting.



Cancel fungus-proof function:

1. When mildew proof function is ON, press "Function" button to enter the interface of function selection.
2. Press "▲" or "▼" button to mildew proof function, icon "☼" is flashing;
3. Press "Function" button again to cancel mildew proof function, icon will "☼" disappear.

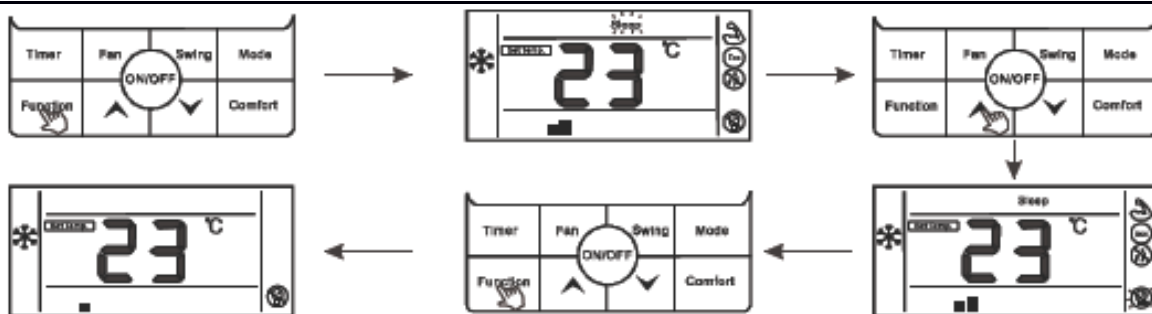


• **The setting of "Light Sensation" function**



Light sensation function: Detect the On and Off of indoor lamplight and switch to low fan speed when the lamplight is off, which can reduce the noise and create a comfortable sleep environment for users.

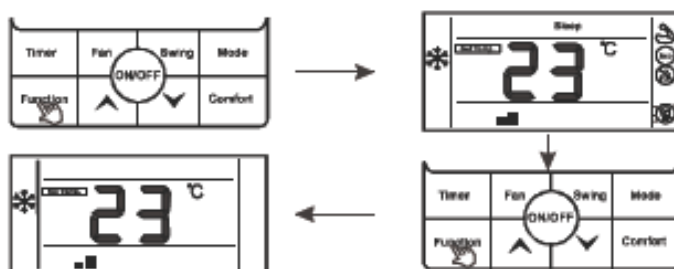
Enter light sensation function:

1. In the state of running, press "Function" button to enter the interface of function selection.
2. Press "▲" or "▼" to switch to light sensation function, icon "☼" is flashing;
3. Press "Function" button again to enter light sensation function, at this moment, icon "☼" is lighting.
4. When light sensation function is on, if the indoor lamplight is OFF and lasts for 20 minutes, the unit will automatically enter sleep mode. If the indoor lamplight is ON, and lasts for 20 minutes, the unit will cancel sleep mode and run according to the setting fan speed.






Cancel light sensation :

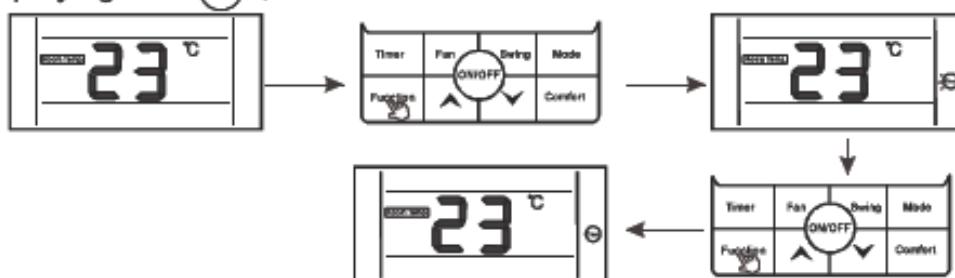
1. When light sensation function is on, press "Function" button to enter the interface of function selection.
2. Press " ^ " or " v " button to switch to light sensation function, icon "  is flashing.
3. Press "Function" button again to cancel light sensation function, icon "  will disappear.



• The setting of "Clean" function



Clean function: The air conditioner can clean the evaporator automatically, which can not only keep air fresh, but also reduce the recession of cooling effect. Enter clean function :

1. In the state of standby, press "Function" button to enter the interface of function selection, icon "  is flashing.
2. Press "Function" button again to confirm clean function, at this moment, icon "  is lighting.
3. When the unit is performing clean function, the wire controller will keep displaying icon " , until it is finished.



Display prompt function

• "WIFI" function display

If the unit is equipped with a WIFI function module, the icon "  " is lighting on wire controller.
If the unit is not equipped with a WIFI function module, the icon "  " does not display.

- **"Shielding" function display**

When unit is locked by centralized control, the wired controller will display "🔒".

- **"Mute" function display**

When the unit enter silent function, display "🔇" icon, when silent function is cancelled, the icon does not display.

Note: The unit without silent function can also set silent through wired controller, but it shows in the way of low wind grade, but "🔇" does not display.

- **"Oil Return / Defrost" function display**

When the unit is running in the state of Oil Return or Defrost, "🔧" icon is lighting on wire controller.

When the unit has finished Oil Return or Defrost process, "🔧" icon does not display.

- **"Filter Screen Clean" function display**

Filter screen cleaning reminder function: The unit can record its running time, when reaching the time set by the user, it will remind the user to clean the filter screen, so as to avoid prolonged cleaning and filter screen blockage, which can result in poor heating/cooling effect, abnormal protection, bacterial breeding, and other problems. When the running time reaches the filter screen cleaning reminder time set by a user, the unit will give out a reminder of filter screen cleaning, wired controller displays "🔧" icon, reminding the user to clean filter screen. At this moment, long press "Timer" button for 5S to cancel the reminder, then the icon does not display. A filter screen cleaning reset signal is sent to the unit.

- **Celsius and Fahrenheit switching display**

When users set Celsius to be valid, the wired controller will display Celsius temperature.

When users set Fahrenheit to be valid, the wired controller will display corresponding Fahrenheit temperature synchronously.

- **"Child Lock" function display**

Press both "▲" or "▼" buttons for more than 5S to enter locking, the controller will display "🔒". In the state of locking, operations on the wired controller are disabled (but remote control receiving is valid). The method of unlocking: Press both "▲" or "▼" buttons for more than 5S or power off the unit to release the locking ("🔒" does not display).

- **Remote control function**

The wired controller can receive remote control commands and update the current status.

Start-up the unit with remote controller, wired controller work in accordance with the state set on the remote controller and displays corresponding working mode;

- **Room temperature sensor equipped on the wired controller**

When the wire controller is equipped with a room temperature sensor and the sensor is not damaged, it is default that the ambient temperature detected by the sensor on the controller and the temperature value will be sent to the main PCB of the unit.

If the wire controller is not equipped with a room temperature sensor or the sensor is damaged, the room temperature will be detected by the temperature sensor of the unit itself.

- **Fault display**

When the unit has fault, the time bar will directly display the fault code and flash, the display mode is Er: MM (MM is the fault code, please read the corresponding product manual).

Installation of wired controller

Installation of accessories

Please confirm whether the parts are complete.

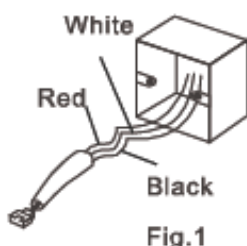
No.	Name	Quantity	Remark
1	Wire controller	1	
2	M4X20 Cross recess pan head screws	2	Install the wire controller in the electric box.
3	Operation and installation instructions	1	
4	Connection wiring	1	To facilitate the configuration of embedded line

The following tools shall be prepared on site.

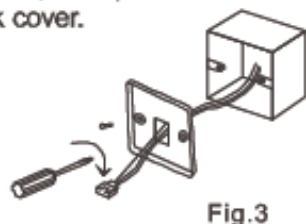
No.	Name	Quantity	Remark
1	Electrical box 86 * 86	1	General electric box, embedded in wall.
2	3-core shielded cable	1	The connection line embedded in wall (connect indoor unit to wire controller).
3	Electrical tape	1	To be used at the time of wiring.
4	Big cross screwdriver	1	For the installation of electrical box.
5	Small flathead screwdriver	1	For dismantling the back cover of wire controller.

Installation schematic

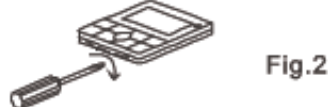
1.As shown in Fig.1, after cutting off the wiring (female end is the connecting end of wire controller), connect the wires to the corresponding lines of embedded lines according to colors (red - communication line, white - power line, black - G N D line).



3.As shown in Fig.3, fix $\phi 4 * 20$ mm screws provided together with the back cover on 86 box, then pass lead wires through the back cover.



2.As shown in Fig.2, use a flathead screwdriver to pry the bottom groove of the wire controller lightly (too much force would damage circuit board), pry rotationally to open the back cover.



4.After connecting the connecting wire to the main body of the wire controller, as shown in Fig. 4, install main body part according to the following steps:
1).Push the upper part of main body into the clip.
2).Use the force of inclined top to install the lower part of main body (horizontal installation is prohibited, which is easy to damage the structural slot).



Part 6. Sensor resistance table**1.Coil temperature sensor resistance reference table**

R25=20KΩ±1%							
B25/50=3950K ±1%							
Temp	resistance (KΩ)			(resist.tol)		(temp.tol)°C	
(°C)	Rmax	R (t) Normal	Rmin	MAX(+)	MIN(-)	MAX(+)	MIN(-)
-30	377.571	347.000	318.338	8.81	8.26	1.36	1.36
-29	354.642	326.228	299.608	8.71	8.16	1.35	1.35
-28	333.353	306.927	282.189	8.61	8.06	1.33	1.33
-27	313.547	288.957	265.927	8.51	7.97	1.32	1.32
-26	295.088	272.196	250.774	8.41	7.87	1.31	1.31
-25	277.860	256.541	236.582	8.31	7.78	1.30	1.30
-24	261.761	241.901	223.323	8.21	7.68	1.29	1.29
-23	246.699	228.193	210.873	8.11	7.59	1.27	1.27
-22	232.598	215.349	199.219	8.01	7.49	1.26	1.26
-21	219.385	203.304	188.260	7.91	7.40	1.25	1.25
-20	206.995	192.000	177.984	7.81	7.30	1.24	1.24
-19	195.360	181.376	168.317	7.71	7.20	1.23	1.23
-18	184.441	171.398	159.212	7.61	7.11	1.21	1.21
-17	174.193	162.025	150.667	7.51	7.01	1.20	1.20
-16	164.568	153.215	142.613	7.41	6.92	1.19	1.19
-15	155.527	144.932	135.048	7.31	6.82	1.17	1.18
-14	147.029	137.141	127.911	7.21	6.73	1.16	1.17
-13	138.912	129.812	121.205	7.01	6.63	1.15	1.15
-12	131.406	122.913	114.874	6.91	6.54	1.14	1.14
-11	124.346	116.418	108.921	6.81	6.44	1.12	1.13
-10	117.701	110.300	103.307	6.71	6.34	1.11	1.12
-9	111.446	104.536	98.003	6.61	6.25	1.10	1.11
-8	105.556	99.104	93.009	6.51	6.15	1.08	1.09
-7	100.007	93.983	88.288	6.41	6.06	1.07	1.08
-6	94.780	89.154	83.840	6.31	5.96	1.06	1.07
-5	89.852	84.598	79.632	6.21	5.87	1.05	1.06
-4	85.124	80.298	75.665	6.01	5.77	1.03	1.05
-3	80.746	76.240	71.910	5.91	5.68	1.02	1.03
-2	76.615	72.408	68.368	5.81	5.58	1.01	1.02
-1	72.717	68.789	65.019	5.71	5.48	1.00	1.01
0	69.037	65.370	61.847	5.61	5.39	0.98	1.00
1	65.563	62.139	58.852	5.51	5.29	0.97	0.99
2	62.280	59.084	56.012	5.41	5.2	0.96	0.97
3	59.180	56.196	53.330	5.31	5.1	0.94	0.96
4	56.248	53.463	50.785	5.21	5.01	0.93	0.95
5	53.428	50.879	48.381	5.01	4.91	0.92	0.94
6	50.810	48.432	46.098	4.91	4.82	0.91	0.93
7	48.335	46.117	43.940	4.81	4.72	0.89	0.91
8	45.993	43.924	41.895	4.71	4.62	0.88	0.90
9	43.776	41.847	39.951	4.61	4.53	0.87	0.89
10	41.678	39.879	38.112	4.51	4.43	0.86	0.88
11	39.691	38.015	36.365	4.41	4.34	0.84	0.87
12	37.809	36.247	34.710	4.31	4.24	0.83	0.85
13	36.026	34.571	33.136	4.21	4.15	0.82	0.84

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Sensor resistance table

14	34.338	32.982	31.646	4.11	4.05	0.80	0.83
15	32.736	31.474	30.228	4.01	3.96	0.79	0.82
16	31.218	30.043	28.883	3.91	3.86	0.78	0.81
17	29.778	28.685	27.606	3.81	3.76	0.77	0.79
18	28.411	27.395	26.390	3.71	3.67	0.75	0.78
19	27.115	26.170	25.236	3.61	3.57	0.74	0.77
20	25.885	25.007	24.137	3.51	3.48	0.73	0.76
21	24.717	23.902	23.094	3.41	3.38	0.72	0.75
22	23.607	22.851	22.099	3.31	3.29	0.70	0.73
23	22.554	21.853	21.156	3.21	3.19	0.69	0.72
24	21.553	20.903	20.255	3.11	3.1	0.68	0.71
25	20.600	20.000	19.400	3.00	3.00	0.66	0.70
26	19.734	19.141	18.549	3.10	3.09	0.69	0.72
27	18.909	18.323	17.739	3.20	3.19	0.72	0.75
28	18.123	17.545	16.970	3.30	3.28	0.74	0.78
29	17.374	16.804	16.238	3.40	3.37	0.77	0.80
30	16.660	16.098	15.541	3.49	3.46	0.80	0.83
31	15.979	15.426	14.879	3.59	3.55	0.82	0.85
32	15.329	14.785	14.248	3.68	3.63	0.85	0.88
33	14.709	14.175	13.647	3.77	3.72	0.88	0.91
34	14.117	13.593	13.075	3.86	3.80	0.90	0.93
35	13.553	13.038	12.531	3.95	3.89	0.93	0.96
36	13.013	12.508	12.012	4.04	3.97	0.95	0.98
37	12.499	12.003	11.517	4.13	4.05	0.98	1.01
38	12.007	11.521	11.045	4.21	4.13	1.01	1.04
39	11.537	11.062	10.595	4.30	4.21	1.03	1.06
40	11.088	10.622	10.166	4.38	4.29	1.06	1.09
41	10.659	10.203	9.757	4.46	4.37	1.09	1.11
42	10.248	9.803	9.367	4.55	4.45	1.11	1.14
43	9.856	9.420	8.994	4.63	4.52	1.14	1.17
44	9.480	9.054	8.638	4.71	4.60	1.17	1.19
45	9.121	8.705	8.298	4.79	4.67	1.19	1.22
46	8.778	8.371	7.973	4.86	4.75	1.22	1.24
47	8.449	8.051	7.663	4.94	4.82	1.24	1.27
48	8.134	7.745	7.367	5.02	4.89	1.27	1.30
49	7.832	7.453	7.083	5.09	4.96	1.30	1.32
50	7.543	7.173	6.812	5.16	5.03	1.32	1.35
51	7.267	6.905	6.553	5.24	5.10	1.35	1.37
52	7.002	6.649	6.305	5.31	5.17	1.38	1.40
53	6.747	6.403	6.068	5.38	5.24	1.40	1.43
54	6.504	6.168	5.841	5.45	5.30	1.43	1.45
55	6.270	5.942	5.623	5.52	5.37	1.46	1.48
56	6.046	5.726	5.415	5.59	5.43	1.48	1.50
57	5.831	5.519	5.216	5.66	5.50	1.51	1.53
58	5.625	5.321	5.025	5.72	5.56	1.53	1.56
59	5.428	5.131	4.842	5.79	5.62	1.56	1.58
60	5.238	4.948	4.667	5.86	5.69	1.59	1.61
61	5.055	4.773	4.499	5.92	5.75	1.61	1.63
62	4.880	4.605	4.338	5.98	5.81	1.64	1.66

63	4.712	4.444	4.183	6.05	5.87	1.67	1.68
64	4.551	4.289	4.035	6.11	5.93	1.69	1.71
65	4.396	4.140	3.893	6.17	5.98	1.72	1.74
66	4.247	3.998	3.756	6.23	6.04	1.75	1.76
67	4.103	3.861	3.625	6.29	6.10	1.77	1.79
68	3.966	3.729	3.500	6.35	6.15	1.80	1.81
69	3.833	3.603	3.379	6.41	6.21	1.82	1.84
70	3.706	3.481	3.263	6.46	6.26	1.85	1.87
71	3.583	3.364	3.152	6.52	6.32	1.88	1.89
72	3.466	3.252	3.045	6.58	6.37	1.90	1.92
73	3.352	3.144	2.942	6.63	6.42	1.93	1.94
74	3.243	3.040	2.843	6.68	6.47	1.96	1.97
75	3.138	2.940	2.748	6.74	6.53	1.98	2.00
76	3.037	2.844	2.657	6.79	6.58	2.01	2.02
77	2.940	2.751	2.569	6.84	6.63	2.04	2.05
78	2.846	2.662	2.485	6.89	6.67	2.06	2.07
79	2.756	2.577	2.403	6.95	6.72	2.09	2.10
80	2.669	2.494	2.325	7.00	6.77	2.11	2.13
81	2.585	2.415	2.250	7.04	6.82	2.14	2.15
82	2.504	2.338	2.178	7.09	6.86	2.17	2.18
83	2.426	2.264	2.108	7.14	6.91	2.19	2.20
84	2.351	2.193	2.041	7.19	6.96	2.22	2.23
85	2.279	2.125	1.976	7.24	7.00	2.25	2.26
86	2.209	2.059	1.914	7.28	7.04	2.27	2.28
87	2.142	1.995	1.854	7.33	7.09	2.30	2.31
88	2.077	1.934	1.796	7.37	7.13	2.33	2.33
89	2.014	1.875	1.740	7.42	7.17	2.35	2.36
90	1.954	1.818	1.687	7.46	7.22	2.38	2.39
91	1.895	1.763	1.635	7.50	7.26	2.41	2.41
92	1.839	1.710	1.585	7.55	7.30	2.43	2.44
93	1.785	1.659	1.537	7.59	7.34	2.46	2.46
94	1.732	1.609	1.490	7.63	7.38	2.48	2.49
95	1.681	1.561	1.446	7.68	7.43	2.51	2.52
96	1.632	1.515	1.402	7.72	7.47	2.54	2.54
97	1.585	1.471	1.360	7.76	7.51	2.56	2.57
98	1.539	1.428	1.320	7.80	7.55	2.59	2.59
99	1.495	1.386	1.281	7.85	7.59	2.62	2.62
100	1.452	1.346	1.243	7.89	7.63	2.64	2.64
101	1.411	1.307	1.207	7.93	7.68	2.67	2.67
102	1.371	1.270	1.172	7.98	7.72	2.70	2.70
103	1.332	1.233	1.137	8.02	7.76	2.72	2.72
104	1.295	1.198	1.104	8.07	7.81	2.75	2.75
105	1.258	1.164	1.070	8.11	8.11	2.77	2.77

2. Environment temperature sensor resistance reference table

R25 = 15.0 K Ω \pm 3%							
B25/50 = 3950K \pm 2%							
T [°C]	Rmin [K Ω]			T [°C]	Rmin [K Ω]		
-25.0	183.4	199.1	216.0	-8.0	70.54	75.10	79.88
-24.5	178.0	193.1	209.4	-7.5	68.69	73.10	77.71
-24.0	172.8	187.4	203.0	-7.0	66.90	71.15	75.61

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Sensor resistance table

-23.5	167.8	181.8	196.9	-6.5	65.17	69.27	73.57
-23.0	162.9	176.5	190.9	-6.0	63.48	67.44	71.59
-22.5	158.2	171.3	185.2	-5.5	61.84	65.67	69.66
-22.0	153.7	166.2	179.6	-5.0	60.25	63.95	67.80
-21.5	149.3	161.4	174.3	-4.5	58.71	62.27	65.99
-21.0	145.0	156.7	169.1	-4.0	57.21	60.65	64.24
-20.5	140.9	152.1	164.1	-3.5	55.75	59.08	62.54
-20.0	136.9	147.7	159.2	-3.0	54.34	57.55	60.89
-19.5	133.0	143.4	154.6	-2.5	52.96	56.06	59.29
-19.0	129.2	139.3	150.0	-2.0	51.63	54.62	57.73
-18.5	125.6	135.3	145.6	-1.5	50.33	53.22	56.22
-18.0	122.1	131.4	141.4	-1.0	49.07	51.86	54.76
-17.5	118.7	127.7	137.3	-0.5	47.84	50.54	53.33
-17.0	115.4	124.1	133.3	0.0	46.65	49.25	51.95
-16.5	112.2	120.6	129.5	0.5	45.49	48.00	50.61
-16.0	109.1	117.2	125.7	1.0	44.37	46.79	49.31
-15.5	106.1	113.9	122.1	1.5	43.27	45.61	48.04
-15.0	103.1	110.7	118.6	2.0	42.21	44.47	46.81
-14.5	100.3	107.6	115.3	2.5	41.17	43.36	45.62
-14.0	97.59	104.6	112.0	3.0	40.17	42.28	44.46
-13.5	94.94	101.7	108.8	3.5	39.19	41.23	43.33
-13.0	92.37	98.88	105.8	4.0	38.24	40.20	42.24
-12.5	89.87	96.16	102.8	4.5	37.31	39.21	41.17
-12.0	87.45	93.52	99.92	5.0	36.41	38.25	40.14
-11.5	85.11	90.96	97.13	5.5	35.53	37.31	39.13
-11.0	82.83	88.48	94.43	6.0	34.68	36.39	38.16
-10.5	80.63	86.07	91.81	6.5	33.85	35.51	37.21
-10.0	78.48	83.74	89.27	7.0	33.05	34.64	36.29
-9.5	76.41	81.48	86.82	7.5	32.26	33.80	35.39
-9.0	74.39	79.29	84.43	8.0	31.50	32.99	34.52
-8.5	72.43	77.16	82.12	8.5	30.75	32.19	33.67
9.0	30.03	31.42	32.84	32.0	10.69	11.09	11.49
9.5	29.33	30.67	32.04	32.5	10.47	10.86	11.26
10.0	28.64	29.94	31.26	33.0	10.24	10.63	11.03
10.5	27.97	29.22	30.50	33.5	10.03	10.41	10.80
11.0	27.32	28.53	29.77	34.0	9.816	10.20	10.59
11.5	26.69	27.86	29.05	34.5	9.609	9.987	10.37
12.0	26.07	27.20	28.35	35.0	9.408	9.782	10.16
12.5	25.47	26.56	27.67	35.5	9.211	9.581	9.957
13.0	24.89	25.94	27.01	36.0	9.019	9.385	9.758
13.5	24.32	25.33	26.37	36.5	8.831	9.194	9.563
14.0	23.76	24.74	25.74	37.0	8.648	9.007	9.372
14.5	23.22	24.17	25.13	37.5	8.469	8.824	9.185
15.0	22.69	23.61	24.54	38.0	8.294	8.645	9.003
15.5	22.18	23.06	23.96	38.5	8.123	8.471	8.825
16.0	21.68	22.53	23.40	39.0	7.957	8.300	8.651
16.5	21.19	22.02	22.85	39.5	7.794	8.134	8.481
17.0	20.72	21.51	22.32	40.0	7.635	7.971	8.315
17.5	20.26	21.02	21.80	40.5	7.479	7.812	8.152

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Sensor resistance table

18.0	19.80	20.55	21.30	41.0	7.328	7.657	7.993
18.5	19.36	20.08	20.80	41.5	7.179	7.505	7.838
19.0	18.94	19.63	20.33	42.0	7.034	7.356	7.686
19.5	18.52	19.19	19.86	42.5	6.893	7.211	7.537
20.0	18.11	18.75	19.40	43.0	6.755	7.069	7.391
20.5	17.71	18.33	18.96	43.5	6.619	6.930	7.249
21.0	17.33	17.93	18.53	44.0	6.487	6.795	7.110
21.5	16.95	17.53	18.11	44.5	6.358	6.662	6.974
22.0	16.58	17.14	17.70	45.0	6.232	6.532	6.841
22.5	16.22	16.76	17.30	45.5	6.108	6.405	6.711
23.0	15.87	16.39	16.91	46.0	5.988	6.282	6.584
23.5	15.53	16.03	16.53	46.5	5.870	6.160	6.459
24.0	15.19	15.68	16.16	47.0	5.755	6.042	6.337
24.5	14.87	15.33	15.80	47.5	5.642	5.926	6.218
25.0	14.55	15.00	15.45	48.0	5.532	5.812	6.101
25.5	14.23	14.67	15.12	48.5	5.424	5.701	5.987
26.0	13.91	14.36	14.80	49.0	5.319	5.593	5.875
26.5	13.61	14.05	14.49	49.5	5.216	5.486	5.766
27.0	13.31	13.74	14.18	50.0	5.115	5.382	5.659
27.5	13.02	13.45	13.88	50.5	5.016	5.280	5.553
28.0	12.73	13.16	13.59	51.0	4.919	5.180	5.450
28.5	12.45	12.88	13.31	51.5	4.825	5.083	5.350
29.0	12.18	12.60	13.03	52.0	4.732	4.987	5.251
29.5	11.92	12.34	12.76	52.5	4.642	4.894	5.155
30.0	11.66	12.08	12.49	53.0	4.553	4.802	5.060
30.5	11.41	11.82	12.23	53.5	4.467	4.713	4.968
31.0	11.17	11.57	11.98	54.0	4.382	4.625	4.877
31.5	10.93	11.33	11.73	54.5	4.300	4.540	4.789
55.0	4.219	4.457	4.703	78.0	1.857	1.993	2.138
55.5	4.139	4.374	4.618	78.5	1.826	1.961	2.103
56.0	4.061	4.293	4.534	79.0	1.796	1.929	2.070
56.5	3.985	4.214	4.452	79.5	1.766	1.898	2.037
57.0	3.911	4.137	4.373	80.0	1.737	1.867	2.005
57.5	3.839	4.062	4.295	80.5	1.709	1.837	1.973
58.0	3.767	3.988	4.218	81.0	1.681	1.808	1.942
58.5	3.698	3.916	4.143	81.5	1.653	1.779	1.912
59.0	3.630	3.845	4.070	82.0	1.626	1.750	1.882
59.5	3.563	3.776	3.998	82.5	1.600	1.722	1.852
60.0	3.498	3.708	3.927	83.0	1.574	1.695	1.824
60.5	3.434	3.642	3.859	83.5	1.548	1.668	1.795
61.0	3.371	3.577	3.791	84.0	1.524	1.642	1.767
61.5	3.310	3.513	3.725	84.5	1.499	1.616	1.740
62.0	3.250	3.450	3.660	85.0	1.475	1.590	1.713
62.5	3.191	3.389	3.596	85.5	1.451	1.565	1.687
63.0	3.134	3.329	3.534	86.0	1.428	1.541	1.661
63.5	3.077	3.271	3.473	86.5	1.406	1.517	1.636
64.0	3.022	3.213	3.413	87.0	1.383	1.493	1.611
64.5	2.968	3.157	3.354	87.5	1.361	1.470	1.586
65.0	2.915	3.102	3.297	88.0	1.340	1.447	1.562

65.5	2.863	3.048	3.241	88.5	1.319	1.425	1.538
66.0	2.813	2.995	3.185	89.0	1.298	1.403	1.515
66.5	2.763	2.943	3.131	89.5	1.278	1.381	1.492
67.0	2.714	2.892	3.078	90.0	1.258	1.360	1.470
67.5	2.666	2.842	3.026	90.5	1.238	1.340	1.448
68.0	2.620	2.793	2.975	91.0	1.219	1.319	1.426
68.5	2.574	2.745	2.925	91.5	1.200	1.299	1.405
69.0	2.529	2.698	2.876	92.0	1.181	1.279	1.384
69.5	2.485	2.652	2.828	92.5	1.163	1.260	1.364
70.0	2.442	2.607	2.781	93.0	1.145	1.241	1.343
70.5	2.399	2.563	2.734	93.5	1.128	1.222	1.324
71.0	2.358	2.519	2.689	94.0	1.110	1.204	1.304
71.5	2.317	2.477	2.645	94.5	1.093	1.186	1.285
72.0	2.278	2.435	2.601	95.0	1.077	1.168	1.266
72.5	2.239	2.394	2.558	95.5	1.060	1.151	1.248
73.0	2.200	2.354	2.516	96.0	1.044	1.134	1.229
73.5	2.163	2.315	2.475	96.5	1.028	1.117	1.212
74.0	2.126	2.276	2.435	97.0	1.013	1.100	1.194
74.5	2.090	2.238	2.395	97.5	0.9976	1.084	1.177
75.0	2.055	2.201	2.356	98.0	0.9826	1.068	1.160
75.5	2.020	2.165	2.318	98.5	0.9679	1.052	1.143
76.0	1.986	2.129	2.280	99.0	0.9535	1.037	1.127
76.5	1.953	2.094	2.244	99.5	0.9392	1.022	1.110
77.0	1.920	2.060	2.208	100.0	0.9252	1.007	1.095
77.5	1.888	2.026	2.172	100.5	0.9115	0.9922	1.079
101.0	0.8981	0.9778	1.064	103.5	0.8339	0.9093	0.9906
101.5	0.8848	0.9636	1.049	104.0	0.8218	0.8963	0.9767
102.0	0.8717	0.9497	1.034	104.5	0.8098	0.8835	0.9631
102.5	0.8589	0.9360	1.019	105.0	0.7981	0.8710	0.9497
103.0	0.8463	0.9225	1.005				

3.Exhaust temperature sensor 6.339K3954

R25=50KΩ±1%							
B25/50=3950K ±1%							
T [°C]	Rmin [KΩ]	T [°C]	Rmin [KΩ]	T [°C]	Rmin [KΩ]	T [°C]	Rmin [KΩ]
-20	449.9	464.7	479.9	20	61.68	62.44	63.20
-19	425.7	439.5	453.6	21	59.00	59.70	60.40
-18	402.9	415.7	428.8	22	56.44	57.09	57.74
-17	381.5	393.4	405.6	23	54.02	54.61	55.20
-16	361.3	372.3	383.6	24	51.70	52.25	52.80
-15	342.2	352.5	363.0	25	49.50	50.00	50.50
-14	324.3	333.9	343.7	26	47.37	47.87	48.37
-13	307.5	316.4	325.5	27	45.34	45.84	46.34
-12	291.5	299.8	308.3	28	43.41	43.91	44.41
-11	276.6	284.3	292.2	29	41.59	42.08	42.57
-10	262.4	269.6	276.9	30	39.84	40.33	40.82
-9	249.0	255.7	262.5	31	38.18	38.66	39.15
-8	236.5	242.7	249.0	32	36.59	37.07	37.55
-7	224.5	230.3	236.2	33	35.07	35.55	36.03
-6	213.3	218.7	224.2	34	33.64	34.11	34.58
-5	202.7	207.7	212.8	35	32.27	32.73	33.20
-4	192.7	197.3	202.0	36	30.95	31.41	31.87
-3	183.2	187.5	191.9	37	29.70	30.15	30.61

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Sensor resistance table

-2	174.3	178.3	182.4	38	28.50	28.95	29.40
-1	165.8	169.5	173.3	39	27.37	27.81	28.25
0	157.7	161.2	164.7	40	26.29	26.72	27.16
1	150.2	153.4	156.7	41	25.24	25.67	26.10
2	142.9	145.9	148.9	42	24.25	24.67	25.09
3	136.1	138.9	141.7	43	23.31	23.72	24.14
4	129.7	132.3	134.9	44	22.41	22.81	23.22
5	123.6	126.0	128.4	45	21.53	21.93	22.33
6	117.8	120.0	122.3	46	20.71	21.10	21.50
7	112.2	114.3	116.4	47	19.92	20.30	20.69
8	107.1	109.0	111.0	48	19.16	19.54	19.92
9	102.1	103.9	105.7	49	18.44	18.81	19.18
10	97.42	99.08	100.8	50	17.75	18.11	18.48
11	92.97	94.51	96.06	51	17.08	17.44	17.80
12	88.74	90.17	91.61	52	16.44	16.79	17.14
13	84.73	86.05	87.38	53	15.84	16.18	16.53
14	80.92	82.14	83.37	54	15.26	15.59	15.93
15	77.29	78.42	79.56	55	14.69	15.02	15.35
16	73.84	74.89	75.95	56	14.16	14.48	14.81
17	70.57	71.54	72.51	57	13.65	13.96	14.28
18	67.46	68.35	69.25	58	13.15	13.46	13.77
19	64.49	65.32	66.15	59	12.69	12.99	13.30

60	12.23	12.53	12.83	90	4.474	4.628	4.787
61	11.80	12.09	12.39	91	4.338	4.489	4.645
62	11.39	11.67	11.96	92	4.207	4.354	4.506
63	10.98	11.26	11.54	93	4.081	4.225	4.374
64	10.60	10.87	11.15	94	3.958	4.099	4.245
65	10.23	10.50	10.77	95	3.840	3.978	4.121
66	9.880	10.14	10.41	96	3.726	3.861	4.001
67	9.537	9.792	10.05	97	3.616	3.748	3.885
68	9.211	9.460	9.715	98	3.509	3.639	3.773
69	8.897	9.141	9.391	99	3.407	3.534	3.665
70	8.595	8.834	9.078	100	3.308	3.432	3.560
71	8.306	8.539	8.778	101	3.212	3.333	3.459
72	8.028	8.256	8.490	102	3.119	3.238	3.361
73	7.759	7.983	8.212	103	3.030	3.146	3.267
74	7.501	7.720	7.944	104	2.942	3.056	3.174
75	7.254	7.468	7.687	105	2.858	2.970	3.086
76	7.016	7.225	7.440	106	2.778	2.887	3.000
77	6.786	6.991	7.201	107	2.699	2.806	2.917
78	6.565	6.765	6.971	108	2.623	2.728	2.837
79	6.352	6.548	6.749	109	2.549	2.652	2.758
80	6.147	6.339	6.536	110	2.479	2.579	2.683
81	5.950	6.138	6.331	111	2.410	2.508	2.610
82	5.761	5.944	6.133	112	2.343	2.439	2.539
83	5.578	5.757	5.942	113	2.279	2.373	2.471
84	5.401	5.577	5.758	114	2.216	2.308	2.404
85	5.231	5.403	5.580	115	2.156	2.246	2.340
86	5.069	5.237	5.410	116	2.097	2.186	2.278
87	4.912	5.076	5.245	117	2.040	2.127	2.217
88	4.760	4.921	5.087	118	1.985	2.070	2.158

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Sensor resistance table

89	4.615	4.772	4.934	119	1.932	2.015	2.102
				120	1.880	1.962	2.047